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Defense Information Infrastructure (DII)

Common Operating Environment (COE)

Software Test Description (STD) and Software Test Report (STR) for the METOC Grid Field API and Database Segments (MAGRID and MDGRID)

Preliminary Release

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1 SCOPE

1.1 Identification

This Software Description Document (STD) and Software Test Report (STR) describes the test procedures and results used to verify the Grid Field API Segment (MAGRID), and the Grid Field Database Segment (MDGRID), Versions 4.1 series, of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database. The MAGRID and MDGRID segment provides APIs and a database for the storage, retrieval, and manipulation of gridded METOC datasets. This software is designed to run under the Defense Information Infrastructure (DII) Common Operating Environment (COE), release 3.1, on a Hewlett-Packard computer running HP-UX 10.20 or a personal computer running the Microsoft Windows NT 4.0 operating system with Service Pack 3.

1.2 System Overview

The APIs described in this document form a portion of the METOC Database component of the TESS(NC) Program (NITES Version I). On 29 October 1996, the Oceanographer of the Navy issued a TESS Program Policy statement in letter 3140 Serial 961/6U570953, modifying the Program by calling for five seamless software versions which are Defense Information Infrastructure (DII) Common Operating Environment (COE) compliant, preferably, to level 5.

The five versions are:

• NITES Version I	The local data fusion center and principal METOC analysis and forecast system. (TESS(NC))
• NITES Version II	The subsystem on the JMCIS or GCCS systems (NITES/JMS)
• NITES Version III	The unclassified aviation forecast, briefing and display subsystem tailored to Naval METOC shore activities (currently satisfied by the Meteorological Integrated Data Display System (MIDDS))
• NITES Version IV	The Portable subsystem composed of independent PCs/workstations and modules for forecaster, satellite, communications, and IC4ISR functions (currently the Interim Mobile Oceanographic Support System (IMOSS))
• NITES Version V	Foreign Military Sales (currently satisfied by the Allied Environmental Support System (AESS))

NITES I acquires and assimilates various METOC data for use by US Navy and Marine Corps weather forecasters and tactical planners. NITES I provides these users METOC data, products, and applications necessary to support the warfighter in tactical operations and decision making. NITES I provides METOC data and products to NITES I and NITES II applications, as well as non-TESS(NC) systems requiring METOC data, in a heterogeneous networked computing environment.

The TESS(NC) Concept of Operations and system architecture require that the METOC Database be distributed both in terms of application access to METOC data and products and in terms of physical location of the data repositories. The organizational structure of the database is influenced by these requirements and the components of this distributed database are described below.

In accordance with DII COE database concepts, the METOC Database is composed of six DII COE compliant *shared database* segments. Associated with each shared database segment is an API segment. The segments are arranged by data type as follows:

Data Type	**Data Segment**	**API Segment**
Grid Fields	MDGRID	MAGRID
Latitude-longitude-time (LLT) Observations	MDLLT	MALLT
Grid fields and Bulletins	MDTXT	MATXT
Remotely Sensed Data	MDREM	MAREM
Imagery and Product Data	MDIMG	MAIMG
Climatology Data	MDCLIM	MACLIM

A typical client-server installation is depicted in Figure 1 on the next page. This shows the shared database segments residing on a DII COE SHADE database server, with a NITES I or II client machine hosting the API segments. Communication between API segments and shared database segments is accomplished over the network using ANSI-standard Structured Query Language (SQL).

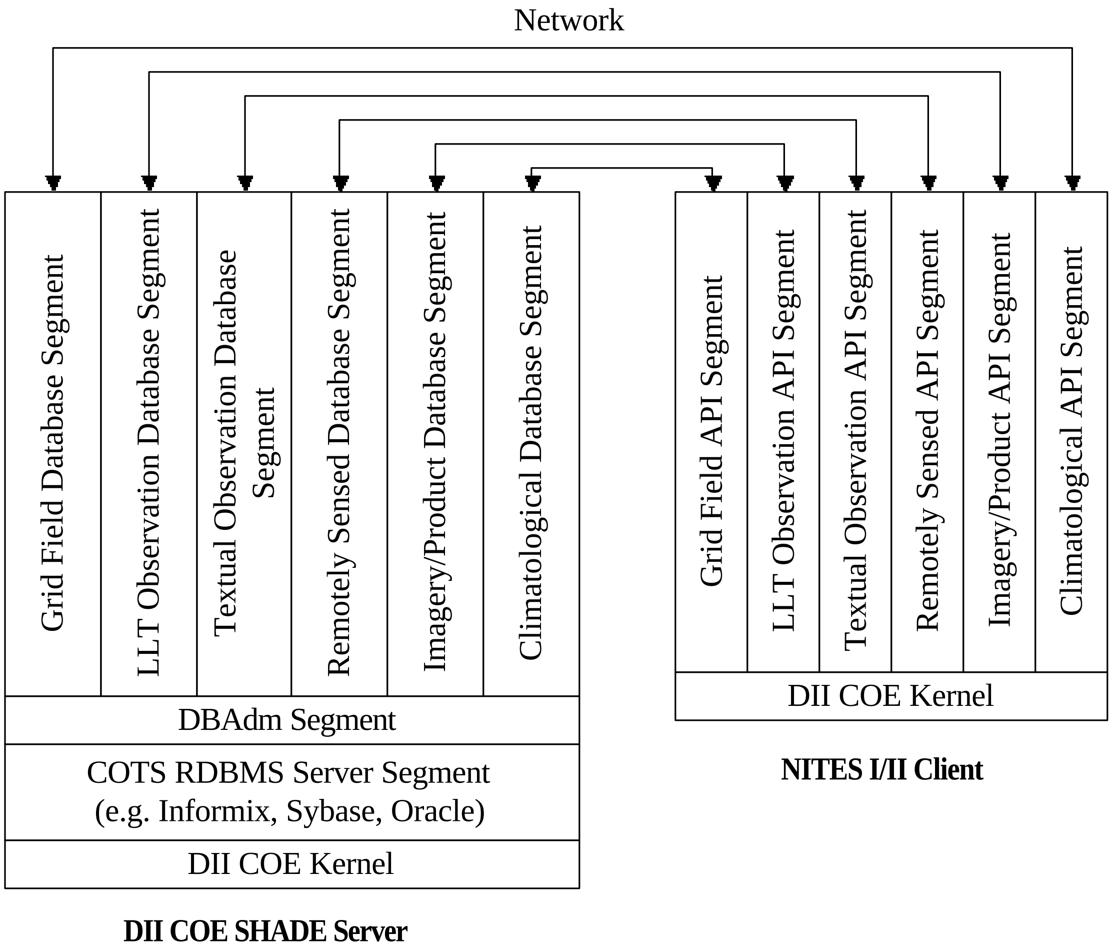
Network
Grid Field Database Segment
LLT Observation Database Segment
Textual Observation Database Segment
Remotely Sensed Database Segment
Imagery/Product Database Segment
Climatological Database Segment
DBAdm Segment
COTS RDBMS Server Segment (e.g. Informix, Sybase, Oracle)
DII COE Kernel
DII COE SHADE Server
Grid Field API Segment
LLT Observation API Segment
Textual Observation API Segment
Remotely Sensed API Segment
Imagery/Product API Segment
Climatological API Segment
DII COE Kernel
NITES I/II Client

Figure 1. TESS(NC) METOC Database Conceptual Organization

The MAGRID and MDGRID segments deal with textual gridded METOC datasets. These fields provide forecasts with valid information with various atmospheric and oceanographic parameters. A dataset represents a logical collection of discrete grid field data records. The grid data records are logically organized with each other by grid model type and basetime. The grid data record contains descriptive information (elements, level, forecast period, etc.) and the active grid values.

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2 REFERENCED DOCUMENTS

2.1 Government Documents

STANDARDS

MIL-STD-498 5 December 1994	*Software Development and Documentation*

SPECIFICATIONS

Unnumbered 5 December 1997	*Performance Specification (PS) for the Tactical Environmental Support System/Next Century TESS(NC) (AN/UMK-3)*
Unnumbered 30 September 1997	*Software Requirements Specification for the Tactical Environmental Support System/Next Century [TESS(3)/NC] Meteorological and Oceanographic (METOC) Database*, Space and Naval Warfare Systems Command, Environmental Systems Program Office (SPAWAR PMW-185), Washington, DC

OTHER DOCUMENTS

Unnumbered 30 September 1997	*Database Design Description for the Tactical Environmental Support System/Next Century [TESS(3)/NC)] Meteorological and Oceanographic (METOC) Database*, Space and Naval Warfare Systems Command, Environmental Systems Program Office (SPAWAR PMW-185), Washington, DC
DII.COE.DocReqs-5 29 April 1997	*Defense Information Infrastructure (DII) Common Operating Environment (COE) Developer Documentation Requirements, Version 1.0*

Department of the Air Force, Headquarters Air Weather Service, Scott AFB, ILL

AWSR 105-2 24 August 1990	*Weather Communications Policies and Procedures*

Naval Research Laboratory, Marine Meteorology Division, Monterey, CA

Unnumbered 22 April 1998	*Programming Manual (PM) for the Grid Field API Segment (MAGRID) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
Unnumbered 22 April 1998	*Application Program Interface Reference Manual (APIRM) for the Grid Field API Segment (MAGRID) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
Unnumbered 22 April 1998	*Installation Procedures (IP) for the Grid Field API Segment (MAGRID) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
Unnumbered 22 April 1998	*Installation Procedures (IP) for the Grid Field Database Segment (MDGRID) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
Unnumbered 22 April 1998	*Software Version Description (SVD) for the Grid Field API Segment (MAGRID) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*
Unnumbered 22 April 1998	*Software Version Description (SVD) for the Grid Field Database Segment (MDGRID) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database*

2.2 Non-Government Documents

None.

3 TEST PREPARATION

3.1 MAGRID and MDGRID Segments Test Preparation

Segment testing for each of the tests and test cases identified in Section 4 is conducted in the TESS (NC) target hardware and software environment. The approach for all testing with the exception of the installation tests (Section 4.1) is performed using software test driver programs with file or tester provided input data. The goal is to automate the testing to the greatest extent possible (within the schedule constraints) to facilitate general, integration, and regression testing of the segments. The test driver programs used are the same as the test driver programs delivered as part of the API segment delivery. Following API segment installation, the programs are located in the subdirectory: **h/MAGRID/Integ/TestSuite**.

3.1.1 Hardware Preparation

To run the tests described herein, the tester must have installed the database segment (MDGRID) on the test server machine where the DII COE RDBMS and DB administration tools reside. Depending on the test client machine and test case, the tester must also have installed the API segments (MAGRID), on the test server machine, the test client machine, or in some cases, both machines. The hardware requirements for the test are described in Section 3.1.1 of the *Installation Procedure (IP) for the Grid Field Database Segment (MDGRID)* and the *Installation Procedure (IP) for the Grid Field API Segment (MDGRID)*. Testing of the APIs in the networked client/server configuration (i.e. PC/Windows NT client, HP-UX database server) requires that both client and server machines are connected on an IEEE 802.3/5 local area network supporting the TCP/IP protocol.

3.1.2 Software Preparation

With the exception of the segment installation tests, the grid field segment tests are performed using semi-automated software test driver programs. These test driver programs are HP-UX and Windows NT portable, command line invokable, executable. The programs rely on ASCII text file and manually entered command line inputs for test case data and control. The program output can be written directly to screen or redirected to files for review or permanent capture. Test drivers have been written for both static and dynamic API library verification. Each test driver supports multiple test cases through single or batch processing of the text files. Manual testing is also supported using the command line parameters.

3.1.2.1 Using the Test Driver Programs

The following table identifies the executable test driver programs used to support grid field testing.

Table 3-1. Grid Field Test Drivers

Test Driver Name[1]	**Test Driver Description**	**Test**
MAGRIDtestStore_d/_l	Stores 2D grid field record(s) to the database.	4.2
MAGRIDtestStore3D_d/_l	Stores 3D grid field record(s) to the database.	4.3
MAGRIDtestReg_d/_l	Registers a grid model for a given center into the database if it does not always exist.	4.4
MAGRIDtestRetrReg_d/_l	Retrieves registration data (grid model) from the database according to a specific query criteria. Grid model data must be available prior to running this test.	4.5
MAGRIDtestGetByID_d/_l	Retrieves a single 2D grid field from the database according to the requested record ID. 2D Grid data must be stored prior to running this test.	4.6
MAGRIDtestGetByQuery_d/_l	Retrieves any number of 2D grids from the database for a specified criteria. 2D Grid fields must be stored in the database prior to running this test.	4.7
MAGRIDtest2DCatalog_d/_l	Retrieves a catalog listing (summary list) of 2D grid data from the database for a specified criteria. 2D Grid fields must be stored in the database prior to running this test.	4.8
MAGRIDtest3DCatalog_d/_l	Retrieves a catalog listing (summary list) of 3D grid data from the database for a specified criteria. 3D grid fields must be stored in the database prior to running this test.	4.9
MAGRIDtestGetVolume_d/_l	Retrieves a single 3D grid volume from the database given specific inputs. 3D grid fields must be stored in the database prior to running this test.	4.10
MAGRIDtestGetSlice_d/_l	Retrieves a single 3D grid volume slice from the databases given specific inputs. 3D grid fields must be stored in the database prior to running this test.	4.11

Table 3-1. Grid Field Test Drivers

Test Driver Name[1]	Test Driver Description	Test
MAGRIDtestProfile_d/_l	Retrieves a single 3D profile or stick from the database given specific inputs. 3D grid fields must be stored in the database prior to running this test.	4.12
MAGRIDtestGetTrack_d/_l	Retrieves a geographic track (great circle route) of 3D profiles (stick) from the database given specific inputs. 3D grid fields must be stored in the database prior to running this test.	4.13
MAGRIDtestUpdateByID_d/_l	Updates a single 2D or 3D grid field in the database with specific grid field points as input by the tester. 2D and 3D grid fields must be stored in the database prior to running this test.	4.14
MAGRIDtestDelete_d/_l	Deletes a single 2D or 3D grid field from the database for a specified criteria. 2D and 3D grid fields must be stored prior to running this test.	4.15

Note 1: Driver program names end with either a _d or _l, where _d = dynamic API library, and _l = static API library. Programs are otherwise functionally identical. Prior to running the dynamic API test drivers, an environmental variable must be set after a new installation of the MAGRID segment. This procedure is covered in Section 3.1.3 of this document.

3.1.2.2 Command Line Arguments

The command line arguments permit the tester to control the test program, test program inputs, test program output, and exercise the test cases developed for the segment. These arguments also allows the tester to manual enter test data and conditions to exercise segment functionality. Each of the driver programs supports the same set of command line parameter inputs. The following table describes the arguments. The *italicized* text denotes the sample name of a file given by the user and any naming convention is up to the user.

Table 3-2. Grid Field Command Line Arguments

Argument	Description
-h	Displays help information about the specific test driver program invoked. e.g., MAGRIDtestStore **-h**
-d	Turns on the debug macros (DPRINTS) within the APIs causing the display of debug information at runtime. e.g., MAGRIDtestStore –b TESTDATA/STORE **-d**

Table 3-2. Grid Field Command Line Arguments

Argument	Description
-l <file name>	Saves the manually entered inputs to a file, which can be used to run automated testing in the batch (-b) processing mode. In addition, once executed, the output is provided to the user. e.g., MAGRIDtestStore **–l** *ingtest2*
-b <directory path>	Turns on test driver batch processing mode. Batch processing mode causes the test driver to run the test cases associated with the input files located in the specified directory path. One or more input files can be located in the directory path. e.g., MAGRIDtestStore **–b** TESTDATA/STORE

3.1.2.3 Test Input Data

Test driver program inputs are provided either manually through tester interaction with the test program or through the test case oriented ASCII text input files. The input files are delivered with the API segment and loaded onto the target system when the segment is installed. The files are located under the **/h/MAGRID/Integ/TestSuite/TESTDATA** path of the target system. The following table identifies the subdirectory name and applicable test under the TESTDATA path.

Table 3-3. Test Driver Subdirectories and Names

Test	Subdirectory	Description
4.2	STORE/	This subdirectory contains the 2D grid fields store test case data files. These files are used in conjunction with the MAGRIDtestStore test drivers.
4.3	STORE_3D/	This subdirectory contains the 3D grid fields store test case data files. These files are used in conjunction with the MAGRIDtestStore3D test drivers.
4.4	REG/	This subdirectory contains registration/grid models test case data files. These files are used in conjunction with the MAGRIDtestReg test drivers.

Table 3-3. Test Driver Subdirectories and Names

Test	Subdirectory	Description
4.5	RETRREG/	This subdirectory contains the grid field registration test case files with the parameters required to retrieve registration/grid models using the database grid ID. These files are used in conjunction with the MAGRIDtestRetrReg test drivers.
4.6	GET_BY_ID/	This subdirectory contains the grid field test case files with the parameters required to retrieve 2D grids using the database grid ID. These files are used in conjunction with the MAGRIDtestGetByID test drivers.
4.7	GETBYQY/	This subdirectory contains the grid field test case files with the parameters required to retrieve one or more 2D grids with specified criteria. These files are used in conjunction with the MAGRIDtestGetByQuery test drivers.
4.8	CAT_2D/	This subdirectory contains the grid field test case files with the parameters required to retrieve a 2D catalog listing of one or more grid fields for a specified criteria. These files are used in conjunction with the MAGRIDtest2DCatalog test drivers.
4.9	CAT_3D/	This subdirectory contains the grid field test case files with the parameters required to retrieve a 3D catalog listing of one or more grid fields for a specified criteria. These files are used in conjunction with the MAGRIDtest3DCatalog test drivers.
4.10	GET_ VOLUME/	This subdirectory contains the grid field test case files with the parameters required to retrieve the entire volume of a 3D grid field for a specified criteria. These files are used in conjunction with the MAGRIDtestGetVolume test drivers.
4.11	SLICE/	This subdirectory contains the grid field test case files with the parameters required to retrieve a volume slice of a 3D grid field for a specified criteria. These files are used in conjunction with the MAGRIDtestGetSlice test drivers.
4.12	PROFILE/	This subdirectory contains the grid field test case files with the parameters required to retrieve a volume profile of a 3D grid field for a specified criteria. These files are used in conjunction with the MAGRIDtestProfile test drivers.

Table 3-3. Test Driver Subdirectories and Names

Test	Subdirectory	Description
4.13	GET_TRACK/	This subdirectory contains the grid field test case files with the parameters required to retrieve a geographic track of profiles 3D grid fields for specified criteria. These files are used in conjunction with the MAGRIDtestGetTrack test drivers.
4.14	UPDATE/	This subdirectory contains the 2D and 3D grid field test case files with the data fields used to update existing grids stored in the database. These files are used in conjunction with the MAGRIDtestUpdate test drivers.
4.15	DELETE/	This subdirectory contains the 2D and 3D grid field test case files providing the deletion criteria used to delete a grid field from the database. These files are used in conjunction with the MAGRIDtestDelete test drivers.

3.1.2.4 Test Output Data

To facilitate review of the desired test cases. Once a test drive is executed on an xterm or console window (see Section 3.1.3 for invoking a window on the HP-UX or NT systems), the user will be able to review debug deprints and/or the status of the driver results. If desired, the test team can redirect these outputs to a file of a specific name for later review. For example, running the store test driver (2D grids) with batch (-b) processing, with the STORE subdirectory test case, with debug deprints, and redirected to the file named *test1*. At the command line the following would be entered at the prompt (/h/MAGRID/Integ/TestSuite>) and executed by selecting the <Enter> button:

```
➢ MAGRIDtestStore_l –b TESTDATA/STORE -d >test1
```

All test results which supports this document are furnished in the on a 3.5” floppy disk in a “text” format (the debug deprint are not provided). Test Results are discussed in **Appendix B** of this document.

In addition, to ensure the test case stored the data in the databases on the HP-UX machine. Go to the target machine, open an xterm window and follow the steps in Section 3.1.3 to use DB Access, which will verify that the grid fields were stored into the database. grid observation can be reviewed to view the various data entries in each.

3.1.3 Other Preparations

3.1.3.1 Establishing an Xterm or console window on the HP-UX and NT platforms

In order to efficiently test the database and API segments, semi-automated software test driver programs were developed. These programs are command line invokable executables that use manual or file inputs to generate redirectable outputs to the display. To operate these driver programs in the DII COE 3.1 software environment requires that an "Xterm" or console window be made available. The following procedures describe how to create the console windows for the HP-UX and Windows NT test environments.

In some of the test cases it maybe necessary for the user to verify the data has been ingested, updated, or deleted in the database located on the HP-UX system. This is accomplished using an xterm window and DB Access with the steps discussed in the Section below.

3.1.3.2 Establishing a console window for a DII COE 3.1 HP-UX System

Log in as *sysadmin* and perform the following steps:

1. Click on the **Application Manager** icon on toolbar.
2. Double-click on the **Desktop_Apps** icon.
3. Double-click on the **Create Action** icon.
4. Enter `xterm` in the **Action Name** field.
5. Click **Find Set...** in the Action Icons panel.
6. In **Icon Folders** list, double-click on **/usr/dt/appconfig/icons/C.**
7. Scroll **Icon Files** list down to the **Dtxterm** icon (a terminal with an X).
8. Click on the **Dtxterm** icon.
9. Click on the **Ok** button.
10. Enter **/usr/bin/X11/xterm -sb -sl 800** in Command field.
11. Enter **This is an xterm** in Help Text field.
12. Select **File/Save** from window menu bar.
13. You should see a **Create Action - Confirmation** window appear.
14. Click **Ok.**
15. Close **Create Action** window.
16. Close **Application Manager** window.
17. Click on the **Home Folder** icon on toolbar.
18. You should see the new action in your folder, and double-click on the new action to launch the folder.

If desired this icon can be installed into the "Personal Applications" pop-up menu panel on the toolbar. This is accomplished by:

1. Click on the **Home Folder** icon on toolbar.
2. Click on the **Personal Application** panel "up arrow" button (above the icon) and drag your new action and drop it on the **Install Icon** button.
3. You should see your new icon appear in the panel.
4. You can move the new icon so it is always visible on the toolbar by right-clicking on the new icon and select **Copy to Main Panel.**

3.1.3.3 Establishing a console window for a Windows NT 4.0 System

The following steps are required to initialize an MS DOS console window on the Windows NT system.

Login as the appropriate user (site dependent) and perform the following steps:

1. Click on the **Start** button at the lower left hand portion of the window.
2. Select **Programs** directly followed by **MS-DOS Prompt**.
3. A *MS-DOS PROMPT* window will be displayed with the DOS command line (C:\) prompt.

3.1.3.4 Setting the Environmental Variable to Run the Dynamic Library API

Before testing the dynamic (shared) library API (_d), the tester must ensure that the environmental variable is set after each fresh installation of the MAGRID segment. This is accomplished my opening an xterm and console window on the HP-UX and NT machines, respectively.

The following steps are required to complete this process:

<u>HP-UX:</u>

1. Open an xterm window.
2. Set the path on the HP-UX by typing:
   `setenv SHLIB_PATH ${SHLIB_PATH}:/h/MAGRID/bin` <Enter>

<u>NT:</u>

1. Open a DOS window.
2. Set the path by typing:
   `set PATH=%PATH%;c:/h/MAGRID/bin` <Enter>
3. `setenv INFORMIXDIR /opt/informix` (required for running -l and -d test drivers)
4. `setenv INFORMIXSERVER online_coe` (required for running -l and -d test drivers)

3.1.3.5 Reviewing the Content of the Database using DB Access

When running the test drivers and associated test cases for Ingest, Update, Delete it may be necessary to review the affected changes in the database located on the HP-UX machine. This is facilitated by running the Informix DB Access tool by opening an xterm window on the target machine and completing the following steps:

1. In the xterm, change directories to the informix bin directory:
   ```
   >cd /opt/informix/bin
   ```
2. Set the environmental variable in the xterm by typing:
   ```
   >setenv TERM vt100
   ```
3. Run dbaccess by typing:
   ```
   >dbaccess
   ```
4. Once in dbaccess, select **Query Language** from menu (default selection) and press < return>
5. Use up/down arrows to select database of interest (e.g., mdgrid..) then press <return>
6. The user is provided several menu options. These options can be selected by either typing the first letter of the option (e.g., typing `I` for Info), or using the arrow keys and <return> to select an option.
7. To view the list of data sets in the database by name, select **Info** and the list of data sets will be displayed. Select <return> then **E** for exit.
8. To view records in a data set (the data set name is required), select **New** and type: `select * from` *`datasetname`* and press <escape> and then select **Run**.
9. This result will display the ingested records stored in the informix database as applied by the ingest test case. The list will show the exact data fields for each observation stored in the database. If there is more than one page, select **Next** from the menu until all records have been displayed.
10. To exit dbaccess, use the **Exit** menu selection. User may need to exit several menu levels before actually exiting dbaccess.

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4 TEST DESCRIPTIONS

4.1 MDGRID and MAGRID Segment Installation Test

The following test cases comprise a segment installation test to verify that the grid field database and API segments install correctly in the target hardware and software environment.

4.1.1 MDGRID Database Segment Installation Test Case

This test case verifies the correct installation of the MDGRID database segment. MDGRID will be installed using the DII COE provided installation tools on the HP-UX target platform.

4.1.1.1 Prerequisite Conditions

The prerequisite conditions for this test case are defined in Section 3 of the *Installation Procedure (IP) for the Grid Field Database Segment (MDGRID) of the Tactical Environmental Support System Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database*, version 4.1 or later (herein referred to as MDGRID IP).

4.1.1.2 Test Inputs

There are no test inputs for this test case other than the operator actions identified in Section 4.0 of the MDGRID IP.

4.1.1.3 Expected Test Results

The Segment Installer window will display **METOC Grid Field Database Segment** in the Currently Installed Segments Section of the window (See Section 4 of the MDGRID IP).

4.1.1.4 Criteria for Evaluating Results

The Segment Installer tool determines and indicates successful installation of the segment to the tester.

4.1.1.5 Test Procedure

The test procedure is identical to the segment installation instructions provided in Section 4 of the MDGRID IP.

4.1.1.6 Assumptions and Constraints

This test assumes the target hardware is operating correctly and configured with the operating and application software identified in Sections 3.1 and 3.2 in the MDGRID IP.

4.1.2 MAGRID API Segment HP Installation Test Case

This test case verifies the correct installation of the HP-UX MAGRID API segment. MAGRID will be installed using the DII COE provided installation tools on the HP-UX target platform. The MAGRID API Segment for HP provides both the dynamic link and static link libraries when installed.

4.1.2.1 Prerequisite Conditions

The prerequisite conditions for this test case are defined in Section 3 of the *Installation Procedure (IP) for the Grid Field API Segment (MAGRID) of the Tactical Environmental Support System Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database*, version 4.1 or later (herein referred to as MAGRID IP).

4.1.2.2 Test Inputs

There are no test inputs for this test case other than the operator actions identified in Section 4.0 of the MAGRID IP.

4.1.2.3 Expected Test Results

The Segment Installer window will display **METOC Grid Field API Segment** in the Currently Installed Segments Section of the window (See Section 4 of the MAGRID IP).

4.1.2.4 Criteria for Evaluating Results

The Segment Installer tool determines and indicates successful installation of the segment to the tester.

4.1.2.5 Test Procedure

The test procedure is identical to the segment installation instructions provided in Section 4 of the MAGRID IP.

4.1.2.6 Assumptions and Constraints

This test assumes the target hardware is operating correctly and configured with the operating and application software identified in Sections 3.1 and 3.2 in the MAGRID IP.

4.1.3 MAGRID API Segment Windows NT Installation Test Case

This test case verifies the correct installation of the Windows NT version of the MAGRID API segment. MAGRID will be installed using the InstallShield^{TM} software provided with the MAGRID Windows NT Segment. The MAGRID API Segment for Windows NT provides both the dynamic link and static link libraries when installed.

4.1.3.1 Prerequisite Conditions

The prerequisite conditions for this test case are defined in Section 3 of the *Installation Procedure (IP) for the Grid Field API Segment (MAGRID) of the Tactical Environmental Support System Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database*, version 4.1 or later (herein referred to as MAGRID IP).

4.1.3.2 Test Inputs

There are no test inputs for this test case other than the operator actions identified in Section 4.0 of the MAGRID IP.

4.1.3.3 Expected Test Results

The InstallShield^{TM} installation program will display the Installation Complete dialogue box. A directory listing of the C:\h\MAGRID directory and subdirectories will display the dynamic link libraries, static link libraries, API test drivers, and test datasets installed with the segment. Note: The Windows NT Explorer application can be used to view the contents of the directories. Section 4.4 of the MAGRID IP lists the installation directories and contents.

4.1.3.4 Criteria for Evaluating Results

The InstallShield^{TM} installation program determines and indicates successful installation of the segment to the tester. Additionally, the contents of the **C:\h\MAGRID** directory and subdirectories should match the list referenced in Section 4.4 of the IP document.

4.1.3.5 Test Procedure

The test procedure is identical to the segment installation instructions provided in Section 4 of the MAGRID IP.

4.1.3.6 Assumptions and Constraints

This test assumes the target hardware is operating correctly and configured with the operating and application software identified in Sections 3.1 and 3.2 in the MAGRID IP.

4.2 2D Grid Field Data Store Test

The following test cases verify that the MDGRID database and MAGRID API segments support the store of 2D gridded field data.

4.2.1 Store 2D Grid Field Test Case

This test case will verify that MDGRID and MAGRID correctly store the 2D grid data fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the storing of each 2D grid data type.

In addition, the storage of the these 2D grid fields will support the testing of erroneous grid data; geographic parameters; and Year 2000 (Y2K) issues.

4.2.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 if this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4.2.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **STORE** test case driver files described in **Appendix A** of this document. These files provide the descriptive parameters and 2D grid field data required for the storage of grid fields to the database. The 2D grid field input data matches the formats defined in WMO-386 for the grid fields supported by MDGRID. These files vary by as described in the SRS Table 3.2-3.

4.2.1.3 Expected Test Results

The MDGRID database will contain correctly formatted grid field data. Unique record IDs will be generated for each grid stored in the database. In addition, specific 2D grids will not be stored to test how grids with erroneous data are handled. The detailed expected test results are provided in **Appendix B** of this document.

4.2.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly tested using the database access (dbaccess) tool to query and verify observation data entries have been stored properly and completely. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.2.1.5 Test Procedure

Once the Prerequisite Conditions (4.2.1.1) for the test have been met, the **MAGRIDtestStore** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.2.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.2.2 Multi User Store of 2D Grid Field Test Case

This test case will verify that MDGRID and MAGRID correctly stores the 2D grid data fields identified in Table 3.2-3 of the METOC Database SRS while simultaneously executing the operation at booth the HP-UX and Windows NT machines without error. The test will demonstrate the storing of each 2D grid data field.

4.2.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.
2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "Up" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4.2.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **STORE** test case driver files described in **Appendix A** of this document. These files provide the descriptive parameters and 2D grid field data required for storing of grid fields to the database. The 2D grid field input data matches the formats defined in WMO-386 for the grid fields supported by MDGRID. These files vary by type as shown in SRS Table 3.2-3.

4.2.2.3 Expected Test Results

The MDGRID database will contain correctly formatted 2D grid field data. Since the HP-UX and Windows NT machines are populating the targeted database, twice as many grid fields will be stored compared to a single store discussed in Section 4.2.1. Unique record IDs will be generated for each grid field stored in the database. In addition, specific 2D grids will not stored to test how 2D grids with erroneous data are handled. The detailed expected test results are provided in **Appendix B** of this document.

4.2.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly tested using the database access (dbaccess) tool to query and verify observation data entries have been stored properly and completely. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.2.2.5 Test Procedure

Once the Prerequisite Conditions (4.2.2.1) for the test have been met, the **MAGRIDtestStore** test driver program is run by the tester on both the HP-UX and Windows NT platforms simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.2.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.3 3D Grid Field Data Store Test

The following test cases verify that the MDGRID database and MAGRID API segments support the store of 3D (modas) gridded field data.

4.3.1 Store 3D Grid Field Test Case

This test case will verify that MDGRID and MAGRID correctly store the 3D grid data fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the storing of each 3D grid data type.

4.3.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 if this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4.3.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **STORE_3D** test case driver files described in **Appendix A** of this document. These files provide the descriptive parameters and 3D grid field data required for the storage of grid fields to the database. The 3D grid field input data matches the formats defined in WMO-386 for the grid fields supported by MDGRID. These files vary by as described in the SRS Table 3.2-3.

4.3.1.3 Expected Test Results

The MDGRID database will contain correctly formatted grid field data. Unique record IDs will be generated for each grid stored in the database. The detailed expected test results are provided in **Appendix B** of this document.

4.3.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly tested using the database access (dbaccess) tool to query and verify observation data entries have been stored properly and completely. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.3.1.5 Test Procedure

Once the Prerequisite Conditions (4.3.1.1) for the test have been met, the **MAGRIDtestStore3D** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.3.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.3.2 Multi User Store of 3D Grid Field Test Case

This test case will verify that MDGRID and MAGRID correctly stores the 3D grid data fields identified in Table 3.2-3 of the METOC Database SRS while simultaneously executing the operation at booth the HP-UX and Windows NT machines without error. The test will demonstrate the storing of each 3D grid data field.

4.3.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "Up" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4.3.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **STORE_3D** test case driver files described in **Appendix A** of this document. These files provide the descriptive parameters and 3D grid field data required for storing of grid fields to the database. The 3D grid field input data matches the formats defined in WMO-386 for the grid fields supported by MDGRID. These files vary by type as shown in SRS Table 3.2-3.

4.3.2.3 Expected Test Results

The MDGRID database will contain correctly formatted 3D grid field data. Since the HP-UX and Windows NT machines are populating the targeted database, twice as many grid fields will be stored compared to a single store discussed in Section 4.2.1. Unique record IDs will be generated for each grid field stored in the database. The detailed expected test results are provided in **Appendix B** of this document.

4.3.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly tested using the database access (dbaccess) tool to query and verify observation data entries have been stored properly and completely. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.3.2.5 Test Procedure

Once the Prerequisite Conditions (4.3.2.1) for the test have been met, the **MAGRIDtestStore3D** test driver program is run by the tester on both the HP-UX and Windows NT platforms simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.3.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.4 Registration of Grid Models in the Database Test

The following test cases verify that the MDGRID database and MAGRID API segments support the registration of new grid models for a given center.

4.4.1 Registration of Grid Models Test Case

This test case will verify that MDGRID and MAGRID correctly register grid models to support grid data fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the registration of new grid models around a specified center.

In addition, the registration of grid models will support the testing of erroneous data and geographic parameters.

4.4.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 if this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4.4.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **REG** test case driver files described in **Appendix A** of this document. These files provide the descriptive parameters and registration data required for the registration of grid models to the database. The registration input data matches the central sit models described in the SRS.

4.4.1.3 Expected Test Results

The MDGRID database will contain correctly registered new grid models. Input test case models that are duplicate or already exist will not populate the database. The detailed expected test results are provided in **Appendix B** of this document.

4.4.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly tested using the database access (dbaccess) tool to query and verify observation data entries have been stored properly and completely. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.4.1.5 Test Procedure

Once the Prerequisite Conditions (4.4.1.1) for the test have been met, the **MAGRIDtestReg** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.4.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.4.2 Multi User Registration of Grid Models Test Case

This test case will verify that MDGRID and MAGRID correctly register grid models to support grid data fields identified in Table 3.2-3 of the METOC Database SRS while simultaneously executing the operation at booth the HP-UX and Windows NT machines without error. The test will demonstrate the storing of new grid models around a specified center.

4.4.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an “Up” status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4.4.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **REG** test case driver files described in **Appendix A** of this document. These files provide the descriptive parameters and registration data required for registration of grid model to the database. The registration input data matches the central sit models described in the SRS.

4.4.2.3 Expected Test Results

The MDGRID database will contain correctly registered new grid models. Since the HP-UX and Windows NT machines are populating the targeted database, only one of each model type will successfully register in the database. Any duplicate grid models will not register and the tester will be alerted of this event. The detailed expected test results are provided in **Appendix B** of this document.

4.4.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly tested using the database access (dbaccess) tool to query and verify observation data entries have been stored properly and completely. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.4.2.5 Test Procedure

Once the Prerequisite Conditions (4.4.2.1) for the test have been met, the **MAGRIDtestReg** test driver program is run by the tester on both the HP-UX and Windows NT platforms simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.4.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.5 Retrieve Registered Grid Models Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of registered grid models form the database.

4.5.1 Retrieve Registered Grid Models Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves registered grid models identified in the SRS. The test will demonstrate the retrieving of a registered test cases using a variety of test cases.

4.5.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.5.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **RETRREG** test case driver files described in **Appendix A** of this document. These files provide data required to query each input field. These fields cover, Grid ID, Center ID and SubCenter ID, which are to retrieve registered grid models from the database.

4.5.1.3 Expected Test Results

The API will retrieve grid models from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.5.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.5.1.5 Test Procedure

Once the Prerequisite Conditions (4.5.1.1) for the test have been met, the **MAGRIDtestRETRREG** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.5.2 Retrieve Registered Grid Models Test Case, Wild Card

This test case will verify that MDGRID and MAGRID correctly retrieves registered grid models identified in the SRS. The test will demonstrate the retrieving of a registered grid models using a series of test cases that query a set of inputs which are stamped as a wild card “-9999”.

4.5.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an “**Up**” status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It is required to store the simulated observations furnished with this program prior to running this test case.

4.5.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **RETRREG** test case driver files described in **Appendix A** of this document. These fields cover, Grid ID, Center ID and SubCenter ID, which are used in combination to retrieve multiple grid fields from the database.

4.5.2.3 Expected Test Results

The API will retrieve grid models form the database which first the wild card criteria. The detailed expected test results are provided in **Appendix B** of this document.

4.5.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.5.2.5 Test Procedure

Once the Prerequisite Conditions (4.5.2.1) for the test have been met, the **MAGRIDtestRetrReg** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.5.3 Retrieve Registered Grid Models with the Erroneous Data Test Case

This test case will verify that MDGRID and MAGRID will not retrieve registered grid models identified in the SRS due to requesting erroneous model parameters. The test will demonstrate that the process will not retrieve registered grid models and make the appropriate response to the tester.

4.5.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have registered grid models available. It is required to ingest the simulated observations furnished with this program prior to running this test case.

4.5.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **RETRREG** test case driver files described in **Appendix A** of this document. These fields cover, Grid ID, Center ID and SubCenter ID, which are used in combination to retrieve multiple grid fields from the database.

4.5.3.3 Expected Test Results

The API will not retrieve grid models from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.5.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.5.3.5 Test Procedure

Once the Prerequisite Conditions (4.5.3.1) for the test have been met, the **MAGRIDtestRetrReg** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.5.4 Simultaneous Retrieve of Registered Grid Models Test

This test case will verify that MDGRID and MAGRID correctly retrieves registered grid models identified in the SRS, when executed from the HP-UX and Windows NT machine simultaneously. The test will demonstrate the retrieving of a registered grid models on both systems with out error using a series of identical test cases.

4.5.4.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.
2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.13. of this document.
3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid model data available. It may be desirable to run a simulated or real data ingest prior to running this test case.

4.5.4.2 Test Inputs

The test inputs necessary for this test case are provided in the **RETRREG** test case driver files described in **Appendix A** of this document. These fields cover, Grid ID, Center ID and SubCenter ID, which are to retrieve registered grid models from the database.

4.5.4.3 Expected Test Results

The API will successfully retrieve grid models from the database on both the HP-UX and Windows NT platforms. The detailed expected test results are provided in **Appendix B** of this document.

4.5.4.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.5.4.5 Test Procedure

Once the Prerequisite Conditions (4.5.4.1) for the test have been met, the **MAGRIDtestRetrReg** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.4.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.6 Retrieve Grid Field with the Get By ID Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of a single 2D grid field from the database.

4.6.1 Retrieve a Grid Field with the Get By ID Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a single 2D grid field identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a single 2D grid field using a series of test cases.

4.6.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.6.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_BY_ID** test case driver files described in **Appendix A** of this document. These files provide the Record ID required for retrieval of a single 2D grid field from the database.

4.6.1.3 Expected Test Results

The API will retrieve a 2D grid field from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.6.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.6.1.5 Test Procedure

Once the Prerequisite Conditions (4.6.1.1) for the test have been met, the **MAGRIDtestGetByID** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.6.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.6.2 Retrieve a Grid Field with the Get By ID Error Test Case

This test case will verify that MDGRID and MAGRID will not retrieves a single 2D grid field identified in Table 3.2-3 of the METOC Database SRS that has an erroneous Record ID. The test will demonstrate that an erroneous Record ID will not retrieve a single 2D grid filed using a series of test cases.

4.6.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.6.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_BY_ID** test case driver files described in **Appendix A** of this document. These files provide the Record ID required for retrieval of a single 2D grid field from the database.

4.6.2.3 Expected Test Results

The API will not retrieve a 2D grid field (one per case) from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.6.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.6.2.5 Test Procedure

Once the Prerequisite Conditions (4.6.2.1) for the test have been met, the **MAGRIDtestGetByID** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.6.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.6.3 Simultaneous Retrieve of a Grid Field with the Get By ID Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a single 2D grid field messages identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and Windows NT machine simultaneously. The test will demonstrate the retrieving of a single 2D grid field on both systems with out error using a series of identical test cases.

4.6.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows

are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.13. of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data ingest prior to running this test case.

4.6.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_BY_ID** test case driver files described in **Appendix A** of this document. These files provide the Record ID required for retrieval of a single 2D grid field from the database.

4.6.3.3 Expected Test Results

The API will retrieve a 2D grid field (one per case) from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.6.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.6.3.5 Test Procedure

Once the Prerequisite Conditions (4.6.3.1) for the test have been met, the **MAGRIDtestGetByID** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.6.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.7 Grid Fields Get By Query Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of 2D grid fields from the database.

4.7.1 Retrieve Grid Fields with the Get By Query Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves multiple 2D grid fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a multiple 2D grid fields using a series of test cases.

4.7.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.7.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **GETBYQY** test case driver files described in **Appendix A** of this document. These files provide data required to query each input field. These 2D fields cover, Generating Product ID, Center, Base Times, Forecast Taus, Levels (x,y), Lat/Lon, Scan Mode, and Projection, which are used in combination to retrieve multiple 2D grid fields from the database.

4.7.1.3 Expected Test Results

The API will retrieve 2D grid field from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.7.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.7.1.5 Test Procedure

Once the Prerequisite Conditions (4.7.1.1) for the test have been met, the **MAGRIDtestGetByQuery** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.7.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.7.2 Retrieve Grid Fields with the Get By Query Test Case, Year 2000 (Y2K)

This test case will verify that MDGRID and MAGRID correctly retrieves multiple 2D grid field identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a multiple 2D grid field using a series of test cases. The 2D grid fields which are part of the furnished store process have time stamps which cross from the year 1999 to 2000.

4.7.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

3. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.7.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **GETBYQY** test case driver files described in **Appendix A** of this document. These 2D fields cover, Generating Product ID, Center, Base Times, Forecast Taus, Levels (x,y), Lat/Lon, Scan Mode, and Projection, which are used in combination to retrieve multiple 2D grid fields from the database.

4.7.2.3 Expected Test Results

The API will retrieve 2D grid field from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.7.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.7.2.5 Test Procedure

Once the Prerequisite Conditions (4.7.2.1) for the test have been met, the **MAGRIDtestGetByQuery** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.7.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.7.3 Retrieve Grid Fields with the Get Test Case, Wild Card

This test case will verify that MDGRID and MAGRID correctly retrieves multiple 2D grid fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a multiple 2D grid fields using a series of test cases that query a set of inputs which are stamped as a wild card “-9999”.

4.7.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.7.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **GETBYQY** test case driver files described in **Appendix A** of this document. These 2D fields cover, Generating Product ID, Center, Base Times, Forecast Taus, Levels (x,y), Lat/Lon, Scan Mode, and Projection, which are used in combination to retrieve multiple 2D grid fields from the database.

4.7.3.3 Expected Test Results

The API will retrieve 2D grid fields form the database. The detailed expected test results are provided in **Appendix B** of this document.

4.7.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.7.3.5 Test Procedure

Once the Prerequisite Conditions (4.7.3.1) for the test have been met, the **MAGRIDtestGetByQuery** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.7.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.7.4 Retrieve Grid Fields with the Get By Query Test Case, Erroneous Data Fields

This test case will verify that MDGRID and MAGRID will not retrieve multiple 2D grid fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate that erroneous specified criteria will not retrieve 2D grid fields using a series of test cases.

4.7.4.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.7.4.2 Test Inputs

The test inputs necessary for this test case are provided in the **GETBYQY** test case driver files described in **Appendix A** of this document. These 2D fields cover, Generating Product ID, Center, Base Times, Forecast Taus, Levels (x,y), Lat/Lon, Scan Mode, and Projection, which are used in combination to retrieve multiple 2D grid fields from the database.

4.7.4.3 Expected Test Results

The API will not retrieve 2D grid fields form the database. The detailed expected test results are provided in **Appendix B** of this document.

4.7.4.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.7.4.5 Test Procedure

Once the Prerequisite Conditions (4.7.4.1) for the test have been met, the **MAGRIDtestGetByQuery** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.7.4.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.7.5 Simultaneous Retrieval of Grid Fields with the Get By ID Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves multiple 2D grid fields identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and Windows NT machines simultaneously. The test will demonstrate the retrieving of a multiple 2D grid fields on both systems without error using a series of identical test cases.

4.7.5.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.7.5.2 Test Inputs

The test inputs necessary for this test case are provided in the **GETBYQY** test case driver files described in **Appendix A** of this document. These 2D fields cover, Generating Product ID, Center, Base Times, Forecast Taus, Levels (x,y), Lat/Lon, Scan Mode, and Projection, which are used in combination to retrieve multiple 2D grid fields from the database

4.7.5.3 Expected Test Results

The API will retrieve 2D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.7.5.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.7.5.5 Test Procedure

Once the Prerequisite Conditions (4.7.5.1) for the test have been met, the **MAGRIDtestGetByQuery** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.7.5.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.8 2D Grid Field Catalog Listing Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of a multiple list of 2D grid fields from the database.

4.8.1 Retrieve 2D Grid Fields Catalog Listing with the Catalog Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a catalog listing of 2D grid fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a catalog list of 2D grid field using a series of test cases.

4.8.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be “Up” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting Identify Storage under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an “Up” status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.8.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_2D** test case driver files described in **Appendix A** of this document. These files provide data required to query each input field. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 2D grid fields from the database.

4.8.1.3 Expected Test Results

The API will retrieve a listing of 2D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.8.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.8.1.5 Test Procedure

Once the Prerequisite Conditions (4.8.1.1) for the test have been met, the **MAGRIDtest2DCatalog** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.8.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.8.2 Retrieve 2D Grid Fields with the Catalog, Geographic Area Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a 2D catalog listing of grid field identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a listing of available 2D grid fields using a series of test cases. These test cases are geared to exercise the retrieval of specific geographic areas, which may be confusing for the database especially when making requests across the equator, international date line, and the prime meridian.

4.8.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.
2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.
5. The database must have 2D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.8.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_2D** test case driver files described in **Appendix A** of this document. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 2D grid fields from the database.

4.8.2.3 Expected Test Results

The API will retrieve a listing of grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.8.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.8.2.5 Test Procedure

Once the Prerequisite Conditions (4.8.2.1) for the test have been met, the **MAGRIDtest2DCatalog** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.8.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.8.3 Retrieve 2D Grid Fields with the Catalog Test Case, Year 2000 (Y2K)

This test case will verify that MDGRID and MAGRID correctly retrieves a catalog listing of 2D grid fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a listing of available 2D grid fields using a series of test cases. The 2D grid fields which are part of the furnished store process have time stamps which cross from the year 1999 to 2000.

4.8.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It is required to store the simulated observations furnished with this program prior to running this test case.

4.8.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_2D** test case driver files described in **Appendix A** of this document. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 2D grid fields from the database.

4.8.3.3 Expected Test Results

The API will retrieve a listing of 2D grid field from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.8.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.8.3.5 Test Procedure

Once the Prerequisite Conditions (4.8.3.1) for the test have been met, the **MAGRIDtest2DCat** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.8.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.8.4 Retrieve 2D Grid Fields with the Catalog Test Case, Wild Card

This test case will verify that MDGRID and MAGRID correctly retrieves a catalog listing of 2D grid fields messages identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a listing of available 2D grid fields using a series of test cases that query a set of inputs which are stamped as a wild card “-9999”.

4.8.4.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows

are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

3. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4. The database must have 2D grid field data available. It is required to store the simulated observations furnished with this program prior to running this test case.

4.8.4.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_2D** test case driver files described in **Appendix A** of this document. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 2D grid fields from the database.

4.8.4.3 Expected Test Results

The API will retrieve a listing of 2D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.8.4.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.8.4.5 Test Procedure

Once the Prerequisite Conditions (4.8.4.1) for the test have been met, the **MAGRIDtest2DCatalog** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.8.4.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.8.5 Retrieve 2D Grid Fields with the Catalog Error Test Case

This test case will verify that MDGRID and MAGRID will not retrieve a catalog listing of 2D grid fields identified in Table 3.2-3 of the METOC Database SRS that has erroneous query data fields. The test will demonstrate that a variety of erroneous data fields will not retrieve the desired catalog listing of 2D grid fields using a series of test cases.

4.8.5.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this documents. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

3. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls.

Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4. The database must have 2D grid field data available. It is required to store the simulated observations furnished with this program prior to running this test case.

4.8.5.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_2D** test case driver files described in **Appendix A** of this document. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 2D grid fields from the database.

4.8.5.3 Expected Test Results

The API will not retrieve a listing of available 2D grid fields in the database. The detailed expected test results are provided in **Appendix B** of this document.

4.8.5.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.8.5.5 Test Procedure

Once the Prerequisite Conditions (4.8.5.1) for the test have been met, the **MAGRIDtest2DCatalog** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.8.5.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.8.6 Simultaneous Retrieve of 2D Grid Fields with the Catalog Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a catalog listing of 2D grid fields identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and the Windows NT machines simultaneously. The test will demonstrate the retrieving of a catalog listing of grid field on both systems without error using a series of identical test cases.

4.8.6.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 2D grid field data available. It is required to store the simulated observations furnished with this program prior to running this test case.

4.8.6.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_2D** test case driver files described in **Appendix A** of this document. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 2D grid fields from the database.

4.8.6.3 Expected Test Results

The API will retrieve a catalog listing of 2D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.8.6.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.8.6.5 Test Procedure

Once the Prerequisite Conditions (4.8.6.1) for the test have been met, the **MAGRIDtest2DCatalog** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.8.6.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.9 3D Grid Field Catalog Listing Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of a multiple list of 3D grid fields from the database.

4.9.1 Retrieve 3D Grid Fields Catalog Listing with the Catalog Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a catalog listing of 3D grid fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a catalog list of 3D grid field using a series of test cases.

4.9.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.9.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_3D** test case driver files described in **Appendix A** of this document. These files provide data required to query each input field. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 3D grid fields from the database.

4.9.1.3 Expected Test Results

The API will retrieve a listing of 3D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.9.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.9.1.5 Test Procedure

Once the Prerequisite Conditions (4.9.1.1) for the test have been met, the **MAGRIDtest3DCatalog** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.9.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.9.2 Retrieve 3D Grid Fields with the Catalog Test Case, Wild Card

This test case will verify that MDGRID and MAGRID correctly retrieves a catalog listing of 3D grid fields identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of a listing of available 3D grid fields using a series of test cases that query a set of inputs which are stamped as a wild card “-9999”.

4.9.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

3. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4. The database must have 3D grid field data available. It is required to store the simulated observations furnished with this program prior to running this test case.

4.9.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_3D** test case driver files described in **Appendix A** of this document. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 3D grid fields from the database.

4.9.2.3 Expected Test Results

The API will retrieve a listing of 3D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.9.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.9.2.5 Test Procedure

Once the Prerequisite Conditions (4.9.2.1) for the test have been met, the **MAGRIDtest3DCatalog** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.9.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.9.3 Retrieve 3D Grid Fields with the Catalog Error Test Case

This test case will verify that MDGRID and MAGRID will not retrieves a catalog listing of 3D grid fields identified in Table 3.2-3 of the METOC Database SRS that has erroneous query data fields. The test will demonstrate that a variety of erroneous data fields will not retrieve the desired catalog listing of 3D grid fields using a series of test cases.

4.9.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.
2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows

are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this documents. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

3. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4. The database must have 3D grid field data available. It is required to store the simulated observations furnished with this program prior to running this test case.

4.9.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_3D** test case driver files described in **Appendix A** of this document. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 3D grid fields from the database.

4.9.3.3 Expected Test Results

The API will not retrieve a listing of available 3D grid fields in the database. The detailed expected test results are provided in **Appendix B** of this document.

4.9.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.9.3.5 Test Procedure

Once the Prerequisite Conditions (4.9.3.1) for the test have been met, the **MAGRIDtest3DCatalog** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.9.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.9.4 Simultaneous Retrieve of 3D Grid Fields with the Catalog Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a catalog listing of 3D grid fields identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and the Windows NT machines simultaneously. The test will demonstrate the retrieving of a catalog listing of grid field on both systems without error using a series of identical test cases.

4.9.4.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 3D grid field data available. It is required to store the simulated observations furnished with this program prior to running this test case.

4.9.4.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT_3D** test case driver files described in **Appendix A** of this document. These fields cover, Model ID, Center ID, Grid ID, Parameter ID, Base Times, Forecast Taus, Levels and the Lat/Lon, which are used in combination to retrieve a listing of 3D grid fields from the database.

4.9.4.3 Expected Test Results

The API will retrieve a catalog listing of 3D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.9.4.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.9.4.5 Test Procedure

Once the Prerequisite Conditions (4.9.4.1) for the test have been met, the **MAGRIDtest3DCatalog** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.9.4.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.10 3D Grid Field Get Volume Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of a the volume of a 3D grid field from the database.

4.10.1 Retrieve 3D Grid Fields with the Get Volume Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves the volume of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of the volume of a 3D grid field using a series of test cases.

4.10.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.10.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_VOLUME** test case driver files described in **Appendix A** of this document. These files provide the Data Set Name, Lat/Lon, Max x and y Points, Scan Mode, Projection Type and Unit ID, which are required for the retrieval of Volume from 3D grid fields stored in the database.

4.10.1.3 Expected Test Results

The API will retrieve the volume of a 3D grid from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.10.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.10.1.5 Test Procedure

Once the Prerequisite Conditions (4.10.1.1) for the test have been met, the **MAGRIDtestGetVolume** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.10.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.10.2 Retrieve 3D Grid Fields with Get Volume Error Test Case

This test case will verify that MDGRID and MAGRID will not retrieve the volume of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS that has an erroneous Record ID. The test will demonstrate that an erroneous Record ID will not retrieve the volume of a single 3D grid field using a series of test cases.

4.10.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.10.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_VOLUME** test case driver files described in **Appendix A** of this document. These files provide the Data Set Name, Lat/Lon, Max x and y Points, Scan Mode, Projection Type and Unit ID, which are required for the retrieval of Volume from a 3D grid fields stored in the database.

4.10.2.3 Expected Test Results

The API will not retrieve the volume of a 3D grid from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.10.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.10.2.5 Test Procedure

Once the Prerequisite Conditions (4.10.2.1) for the test have been met, the **MAGRIDtestGetVolume** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.10.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.10.3 Simultaneous Retrieve of 3D Grid Fields with the Get Volume Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves the volume of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and Windows NT machine simultaneously. The test will demonstrate the retrieving the volume of a single 3D grid field on both systems with out error using a series of identical test cases.

4.10.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are

required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.13. of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data ingest prior to running this test case.

4.10.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_VOLUME** test case driver files described in **Appendix A** of this document. These files provide the Data Set Name, Lat/Lon, Max x and y Points, Scan Mode, Projection Type and Unit ID, which are required for the retrieval of Volume from a 3D grid fields stored in the database.

4.10.3.3 Expected Test Results

The API will retrieve the volume of 3D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.10.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.10.3.5 Test Procedure

Once the Prerequisite Conditions (4.10.3.1) for the test have been met, the **MAGRIDtestGetVolume** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.10.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.11 3D Grid Field Get Slice Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of a Slice of a 3D grid field from the database.

4.11.1 Retrieve 3D Grid Fields with the Get Slice Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves the slice of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of the slice of a 3D grid field using a series of test cases.

4.11.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.
2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.
5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.11.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **SLICE** test case driver files described in **Appendix A** of this document. These files provide the Record ID, Data Set Name, Lat/Lon, Max x and y Points, Scan Mode, Projection Type and Unit ID, which are required for the retrieval of Slice from a 3D grid fields stored in the database.

4.11.1.3 Expected Test Results

The API will retrieve the slice of a 3D grid from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.11.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.11.1.5 Test Procedure

Once the Prerequisite Conditions (4.11.1.1) for the test have been met, the **MAGRIDtestGetSlice** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.11.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.11.2 Retrieve 3D Grid Fields with the Get Slice Error Test Case

This test case will verify that MDGRID and MAGRID will not retrieve the slice of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS that has an erroneous Record ID. The test will demonstrate that an erroneous Record ID will not retrieve the slice of a single 3D grid field using a series of test cases.

4.11.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.11.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **SLICE** test case driver files described in **Appendix A** of this document. These files provide the Record ID, Data Set Name, Lat/Lon, Max x and y Points, Scan Mode, Projection Type and Unit ID, which are required for the retrieval of Slice from a 3D grid fields stored in the database.

4.11.2.3 Expected Test Results

The API will not retrieve the slice of a 3D grid from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.11.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.11.2.5 Test Procedure

Once the Prerequisite Conditions (4.11.2.1) for the test have been met, the **MAGRIDtestGetSlice** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.11.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.11.3 Simultaneous Retrieve of a 3D Grid Field with the Get Slice Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a the slice of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and Windows NT machine simultaneously. The test will demonstrate the retrieving the slice of a single 3D grid field on both systems with out error using a series of identical test cases.

4.11.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are

required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.13. of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data ingest prior to running this test case.

4.11.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **SLICE** test case driver files described in **Appendix A** of this document. These files provide the Record ID, Data Set Name, Lat/Lon, Max x and y Points, Scan Mode, Projection Type and Unit ID, which are required for the retrieval of Slice from a 3D grid fields stored in the database.

4.11.3.3 Expected Test Results

The API will retrieve the slice of 3D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.11.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.11.3.5 Test Procedure

Once the Prerequisite Conditions (4.11.3.1) for the test have been met, the **MAGRIDtestGetSlice** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.11.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.12 3D Grid Field Profile Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of the profile of a 3D grid field from the database.

4.12.1 Retrieve 3D Grid Fields with the Profile Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves the profile of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of the profile of a 3D grid field using a series of test cases.

4.12.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.
2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.
5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.12.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **PROFILE** test case driver files described in **Appendix A** of this document. These files provide the Record ID and Lat/Lon, which are required for the retrieval of Profile from a 3D grid fields stored in the database.

4.12.1.3 Expected Test Results

The API will retrieve the profile of a 3D grid from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.12.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.12.1.5 Test Procedure

Once the Prerequisite Conditions (4.12.1.1) for the test have been met, the **MAGRIDtestProfile** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.12.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.12.2 Retrieve 3D Grid Fields with Get Profile Error Test Case

This test case will verify that MDGRID and MAGRID will not retrieve the profile of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS that has an erroneous Record ID. The test will demonstrate that an erroneous Record ID will not retrieve the profile of a single 3D grid field using a series of test cases.

4.12.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.12.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **PROFILE** test case driver files described in **Appendix A** of this document. These files provide the Record ID and Lat/Lon, which are required for the retrieval of Profile from a 3D grid fields stored in the database.

4.12.2.3 Expected Test Results

The API will not retrieve the profile of a 3D grid from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.12.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.12.2.5 Test Procedure

Once the Prerequisite Conditions (4.12.2.1) for the test have been met, the **MAGRIDtestProfile** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.12.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.12.3 Simultaneous Retrieve of a 3D Grid Field with the Profile Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a the profile of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and Windows NT machine simultaneously. The test will demonstrate the retrieving the profile of a single 3D grid field on both systems with out error using a series of identical test cases.

4.12.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.13. of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.12.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **PROFILE** test case driver files described in **Appendix A** of this document. These files provide the Record ID and Lat/Lon, which are required for the retrieval of Profile from a 3D grid fields stored in the database.

4.12.3.3 Expected Test Results

The API will retrieve the profile of 3D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.12.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.12.3.5 Test Procedure

Once the Prerequisite Conditions (4.12.3.1) for the test have been met, the **MAGRIDtestProfile** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section

3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.12.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.13 3D Grid Field Get Track Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the retrieval of a the geographic track of a 3D grid field from the database.

4.13.1 Retrieve 3D Grid Fields with the Get Track Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves the geographic track of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the retrieving of the geographic track of a 3D grid field using a series of test cases.

4.13.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.13.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_TRACK** test case driver files described in **Appendix A** of this document. These files provide the Generating Process, Center ID, Base Times, Lat/Lon, Track Bearing/ Range and Resolution, which are required for the retrieval of a geographic track from the 3D grid fields stored in the database.

4.13.1.3 Expected Test Results

The API will retrieve the track of a 3D grid from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.13.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.13.1.5 Test Procedure

Once the Prerequisite Conditions (4.13.1.1) for the test have been met, the **MAGRIDtestGetTrack** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.13.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.13.2 Retrieve 3D Grid Fields with Get Track Error Test Case

This test case will verify that MDGRID and MAGRID will not retrieve the geographic track of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS that has an erroneous Record

ID. The test will demonstrate that an erroneous Record ID will not retrieve the geographic track of a single 3D grid field using a series of test cases.

4.13.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have 3D grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.13.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_TRACK** test case driver files described in **Appendix A** of this document. These files provide the Generating Process, Center ID, Base Times, Lat/Lon, Track Bearing/ Range and Resolution, which are required for the retrieval of a geographic track from the 3D grid fields stored in the database.

4.13.2.3 Expected Test Results

The API will not retrieve the geographic track of a 3D grid from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.13.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.13.2.5 Test Procedure

Once the Prerequisite Conditions (4.13.2.1) for the test have been met, the **MAGRIDtestGetTrack** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.13.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.13.3 Simultaneous Retrieve of a 3D Grid Field with the Get Track Test Case

This test case will verify that MDGRID and MAGRID correctly retrieves a the geographic track of a 3D grid field identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and Windows NT machine simultaneously. The test will demonstrate the retrieving the geographic track of a single 3D grid field on both systems with out error using a series of identical test cases.

4.13.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine,

the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.13. of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.13.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET_TRACK** test case driver files described in **Appendix A** of this document. These files provide the Generating Process, Center ID, Base Times, Lat/Lon, Track Bearing/ Range and Resolution, which are required for the retrieval of a geographic track from the 3D grid fields stored in the database.

4.13.3.3 Expected Test Results

The API will retrieve the geographic track of 3D grid fields from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.13.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.13.3.5 Test Procedure

Once the Prerequisite Conditions (4.13.3.1) for the test have been met, the **MAGRIDtestGetTrack** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.13.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.14 Updating Existing 2D and 3D Grid Field Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the update of an existing 2D and 3D grid field. This test will also verify multi-usage and updates using erroneous data.

4.14.1 Updating Existing Grid Field with the Update By ID Test Case

This test case will verify that MDGRID and MAGRID correctly updates grid field data identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the updating a 2D or 3D grid field in the database. As a result, a new grid field will be made and it will be marked as edited.

4.14.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.14.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **UPDATE** test case driver files described in **Appendix A** of this document. The Record ID and relational database size (BLOB) are used to update the desired grid field in the database.

4.14.1.3 Expected Test Results

The API will add an additional grid field to the database or update an already existing grid field previously marked as edited. The detailed expected test results are provided in **Appendix B** of this document.

4.14.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester makes use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly test using the Date Base Access (DB Access) tool to query and verify observation data entries have been updated properly. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.14.1.5 Test Procedure

Once the Prerequisite Conditions (4.14.1.1) for the test have been met, the **MAGRIDtestUpdateByID** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.14.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.14.2 Updating an Existing Grid field with Erroneous Data using the Update By ID Test Case

This test case will verify that MDGRID and MAGRID will not update grid field data identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate that erroneous data will not update the requested record ID in the database. As a result, the user will be informed that any data entry that does not fit the data structure will be unacceptable.

4.14.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.14.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **UPDATE** test case driver files described in **Appendix A** of this document. The record ID and relational database size (BLOB) are used to update the desired grid field in the database. For this case the erroneous record ID will not make a grid field as updated.

4.14.2.3 Expected Test Results

The API will not update the desired grid field in the database due to an erroneous record ID. The detailed expected test results are provided in **Appendix B** of this document.

4.14.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester makes use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly test using the Date Base Access (DB Access) tool to query and verify observation data entries have been updated properly. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.14.2.5 Test Procedure

Once the Prerequisite Conditions (4.14.2.1) for the test have been met, the **MAGRIDtestUpdateByID** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.14.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.14.3 Simultaneous Updating of Existing Grid Fields with the Update By ID Test Case

This test case will verify that MDGRID and MAGRID correctly updates grid field data identified in Table 3.2-3 of the METOC Database SRS when executed from both the HP-UX and the Windows NT machines simultaneously. The test will demonstrate that selecting an existing record ID will add an additional 2D or 3D grid field to the database and mark it as edited. This is dependent on the machine that responds first to the database. The second machine to respond will simple update the new grid field which was marked as edited. No additional grid field will be produced.

4.14.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin***.** On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.14.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **UPDATE** test case driver files described in **Appendix A** of this document. The record ID and relational database size (BLOB) are used to update the desired grid field in the database. For this case the erroneous record ID will not mark a grid field as updated.

Expected Test Results

The API will add an additional grid field to the database or update an already existing grid field previously marked as edited. The detailed expected test results are provided in **Appendix B** of this document.

4.14.3.3 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester makes use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly test using the Date Base Access (DB Access) tool to query and verify observation data entries have been updated properly. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.14.3.4 Test Procedure

Once the Prerequisite Conditions (4.14.3.1) for the test have been met, the **MAGRIDtestUpdateByID** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.14.3.5 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.15 Deleting an Existing 2D and 3D Grid Field Test

The following test cases verify that the MDGRID database and MAGRID API segments supporting the deletion of an existing 2D and 3D grid fields. This test will also verify multi-usage and deletions using erroneous data.

4.15.1 Deleting an Existing Grid Field with the Delete Test Case

This test case will verify that MDGRID and MAGRID correctly deletes a 2D or 3D single grid field messages identified in Table 3.2-3 of the METOC Database SRS. The test will demonstrate the deletion of a single grid field using a series of test cases.

4.15.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.

3. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

5. The database must have grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.15.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **DELETE** test case driver files described in **Appendix A** of this document. These files provide the Record ID and Data Set Table Name required for deletion of a single 2D or 3D grid field from the database.

4.15.1.3 Expected Test Results

The API will delete a grid field from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.15.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly test using the Date Base Access (DB Access) tool to query and verify observation data entries have been updated properly. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.15.1.5 Test Procedure

Once the Prerequisite Conditions (4.15.1.1) for the test have been met, the **MAGRIDtestDelete** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.15.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.15.2 Deleting an Existing Grid Field with the Delete with Erroneous Data Test Case

This test case will verify that MDGRID and MAGRID will not delete a single 2D or 3D grid field identified in Table 3.2-3 of the METOC Database SRS that has an erroneous Record ID or Data Set Table Name. The test will demonstrate that an erroneous Record ID or Data Set Table Name will not delete a single observation using a series of test cases.

4.15.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin*. On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

3. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4. The database must have grid field data available. It may be desirable to run a simulated or real data store prior to running this test case.

4.15.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **DELETE** test case driver files described in **Appendix A** of this document. These files provide the Record ID Data Set Table Name required for deleting a single 2D or 3D grid field from the database.

4.15.2.3 Expected Test Results

The API will not delete a grid field from the database. The detailed expected test results are provided in **Appendix B** of this document.

4.15.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester makes use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly test using the Date Base Access (DB Access) tool to query and verify observation data entries have been updated properly. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.15.2.5 Test Procedure

Once the Prerequisite Conditions (4.15.2.1) for the test have been met, the **MAGRIDtestDelete** test driver program is run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.15.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

4.15.3 Simultaneous Deletion of an Existing Grid Field with the Delete Test Case

This test case will verify that MDGRID and MAGRID correctly deletes a single 2D or 3D grid fields identified in Table 3.2-3 of the METOC Database SRS when executed from the HP-UX and Windows NT machine simultaneously. The test will demonstrate the deletion of a single 2D or 3D grid field on both systems with out error using a series of identical test cases. For this particular case either the HP-UX or Windows NT will attempt to delete the requested grid field, but only one will be successful. The other platform will receive an error that the grid field does not exist.

4.15.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MADGRID and MDGRID IP documents.

2. Testing should be conducted while logged in as *sysadmin***.** On the HP target platform the tester must be able to initiate and have access to an xterm window. On the Windows NT machine, the tester must be able to initiate and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be "**Up**" for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

3. To ensure the test environment has a clean database, it is recommended that database and API segments be deinstalled and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an "**Up**" status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MADGRID and MDGRID IP documents) for proper installation procedures.

4. The database must have grid field data available. It may be desirable to run a simulated or real data ingest prior to running this test case.

4.15.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **DELETE** test case driver files described in **Appendix A** of this document. These files provide the Record ID and Data Set Table Name required for deleting a single 2D or 3D grid field from the database.

4.15.3.3 Expected Test Results

The API will delete the desired grid field form the database. The second platform to query the database will receive a response or error that grid goes not exist (since it was just deleted). The detailed expected test results are provided in **Appendix B** of this document.

4.15.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester makes use of the database access tool (e.g., Informix DB Access discussed in Section 3.1.3) must match exactly with the Expected Test Results. The range of accuracy is exact with no deviation from the expected result. The output information is compared by re-directing the results to a file using the test driver debug command line argument or conventional screen capture techniques. The file is then viewed and compared with the expected test results provided in this document. The database is directly test using the Date Base Access (DB Access) tool to query and verify observation data entries have been updated properly. The test case must be run on both target platforms (HP-UX and Windows NT) and the test results compared to ensure both platforms provide the same results.

4.15.3.5 Test Procedure

Once the Prerequisite Conditions (4.15.3.1) for the test have been met, the **MAGRIDtestDelete** test driver program is run by the tester on both the HP-UX and Windows NT machines simultaneously. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.15.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of the MDGRID IP and this document.

5 REQUIREMENTS TRACEABILITY

All of the test cases discussed in Section 4 of this document were derived from the specifications and requirements referenced in the *Performance Specification (PS) for the Tactical Environmental Support System/Next Century [TESS(NC)] (UN/UMK-3)* and the *Software Requirements Specification for the Tactical Environmental Support System/Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database*.

6 GLOSSARY OF ACRONYMS

AESS	Allied Environmental Support System
API	Application Program Interface
APIRM	API Reference Manual
COE	Common Operating Environment
DBDD	Database Design Description
DID	Data Item Description
DII	Defense Information Infrastructure
GCCS	Global Command and Control System
IC4ISR	Integrated Command, Control, Communications, Computer, and Intelligence Surveillance Reconnaissance
IMOSS	Interim Mobil Oceanographic Support System
JMCIS	Joint Maritime Command Information System
JMS	Joint METOC Segment
MAGRID	Grid Fields API Segment of the TESS/NC METOC Database
MDGRID	Grid Fields Database Segment of the TESS/NC METOC Database
METOC	Meteorological and Oceanographic
MIDDS	Meteorological Integrated Data Display System
NC	Next Century
PS	Performance Specification
SRS	Software Requirements Specification
TESS	Tactical Environmental Support System

Appendix A - Grid field Segment Test Inputs

The following data and files are required as input data by grid field segment (i.e. MDGRID, MAGRID) testing.

A.1 MDGRID and MAGRID Segment Installation Test

No input data is required by these Test Cases 4.1.1, 4.1.2, and 4.1.3. See associated MDGRID and MAGRID Installation Procedure documents.

A.2 2D Grid Field Data Store Test

A.2.1 Store 2D Grid Field Test Case (4.2.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/STORE** directory on the target platform.

Input Filename	Description
st_gsowm_prm_wav_hgt	GSOWM Model, Primary Wave Height
st_nogaps_fog_prob	NOGAPS Model, Fog Probability
st_nogaps_frnt_anls	NOGAPS Model, Frontal Analysis
st_nogaps_frz_lvl	NOGAPS Model, Frontal Analysis
st_global_ecmwfldeg	ECMWF Model, 1 degree grid
st_global_nmc1deg	NMC Model, 1 degree grid
st_global_eots_99	Global area with Y2K test
st_global_goxm	Global area
stglobal_gsowm	Global GSOWM
st_global_nogaps1deg_y2k	NOGAPS Model, 1 degree mode with Y2K test
st_global_otis_99	OTIS Model, Global with Y2K test
st_ global_stratoi_y2k	STRATIOI Model with Y2K test
st_global_tops	TOPS model with global area
st_global_tropo	TROPO Model with global area
st_global_tyan_99	TYAN Model with global area
st_global_uanva	Global area
st_norapsAsia	NORAPS Asia Model
st_norapsBosnia_99	NORAPS Bosnia Model with Y2K test
st_norapsConus	NORAPS Conus Model

Input Filename	Description
st_norapsEurope_y2k	NORAPS Europe Model with Y2K test
st_norapsInO_y2k	NORAPS Indian Ocean Model with Y2K test
st_norapsSoCal	NORAPS SO CAL Area
X_st_nogaps_parm900	Bad NOGAPS with erroneous Parameter ID

The following is an example of the data structure required for the storing of a typical 2D grid field:

58	Generation Process ID
223	Grid ID
58	Center ID
0	Sub Center
882421200	Base Time (Epoc Time Format)
145	Parameter ID
940	Parameter Unit ID
100	Level Type
0.0	Level Lo
0.0	Level Hi
12	Tau (Hours)
0	Quality Indicator
UNCLAS	Security Classification (text)
NET	Receipt Method (text)
None	Compression (text)
144	Grid X Size
73	Grid Y Size

A.2.2 Multi User Store of 2D Grid Field Test Case (4.2.2) Inputs

The multi-user test stores all of the 2D grid fields described in A.2.1. The only difference if that the 2D store test driver is initiated simultaneously at the HP and Windows NT machines. The database is then checked to verify that duplicate grid fields have been ingested properly.

A.3 3D Grid Field Data Store Test

A.3.1 Store 3D Grid Field Test Case (4.3.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/STORE_3D** directory on the target platform.

Input Filename	Description
st_conus	NORAPS Conus Model with 3D modas grid
st_io	NORAPS Indian Ocean Model with 3D modas grid
st_socal	NORAPS SO CAL Model with 3D modas grid

The following is an example of the data structure required for the storing of a typical 3D grid field:

200	Generation Process ID
251	Grid ID
58	Center ID
0	Sub Center
882421200	Base Time (Epoc Time Format)
250	Parameter ID
0	Parameter Unit ID
1	Level Type
0	Tau (Hours)
0	Quality Indicator
0	Data Category
UNCLAS	Security Classification (text)
NET	Receipt Method (text)
None	Compression (text)
145	Grid X Size
93	Grid Y Size
1.0	Level 0
12.0	Level 2 (etc.)

A.3.2 Multi User Store of 3D Grid Field Test Case (4.3.2) Inputs

The multi-user test stores all of the 3D grid fields described in A.3.1. The only difference if that the 3D store test driver is initiated simultaneously at the HP and Windows NT machines. The database is then checked to verify that duplicate grid fields have been ingested properly.

A.4 Registration of Grid Models in the Database Test

A.4.1 Registration of Grid Models Test Case (4.4.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/REG** directory on the target platform.

Input Filename	Description
reg_new_sm	Registration of a Lambert Projection
reg_new_mercator	Registration of a Mercator Projection
reg_norapsBosnia_spherical	Registers a NORAPS Bosnia model area with a Spherical Projection
reg_new_polar	Registers a Polar Projection
reg_norapsBosnia_sphere2	Registers a NORAPS Bosnia model with a Spherical Projection
reg_modas_socal	Registers a Modas SO CAL model area
reg_modas_io	Registers a Modas Indian Ocean model area
reg_modas_conus	Registers a Modas CONUS model area
X_reg_XPts	Bad X Points
X_reg_XRes	Bad X Resolution
X_reg_YPts	Bad Y Points
X_reg_YRes	Bad Y Resolution
X_reg_lat	Bad Latitude
X_reg_lon	Bad Longitude
X_reg_proj	Bad Projection
X_reg_regx	Bad X Registration
X_reg_regy	Bad Y Registration
X_reg_res	Bad Resolution
X_reg_sm	Bad Scan Mode

The following is an example of the data structure required to register a grid model using the Reg API:

252	Grid ID
58	Center ID
0	Sub Center ID
200	Model ID
0.00	Latitude Registration
28.0	Longitude Registration

1.0	X Registration
81.0	Y Registration
5.0	X Distance in KM
5.0	Y Distance in KM
149	Max X Points
81	Max Y Points
34	Max Z Points
4	Scan Mode
16	Projection Type
.5	X Resolution
.5	Y Resolution
MODAS	Registration Name (text)

A.4.2 Multi User Registration of Grid Models Test Case (4.4.2) Inputs

The multi-user test stores all of the registrations described in A.4.1. The only difference if that the registration test driver is initiated simultaneously at the HP and Windows NT machines. The database is then checked to verify that only one grid model registration has been store properly to the database. Duplicate registrations will not be stored.

A.5 Retrieve Registered Grid Models Test

A.5.1 Retrieve Registered Grid Models Test Case (4.5.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/RETRREG** directory on the target platform.

Input Filename	Description
retrReg_grid	Retrieves registration with grid ID
retrReg_norapsConus	Retrieves NORAPS CONUS registration
retrReg_nogaps	Retrieves NOGAPS registration
retrReg_norapsEurp	Retrieves NOGAPS registration

The following is an example of the data structure required for retrieving a one or more registered models.

223	Grid ID
58	Center ID
0	Sub Center ID

A.5.2 Retrieve Registered Grid Models Test Case, Wild Card (4.5.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/RETRREG** directory on the target platform.

Input Filename	Description
retrReg_allWild	Retrieves registrations that are wild

A.5.3 Retrieve Registered Grid Models with the Erroneous Data Test Case (4.5.3) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/RETREG** directory on the target platform.

Input Filename	Description
x_retrReg_ctrID	Bad retrieve of registration using Center ID
x_retrReg_subID	Bad retrieve of registration using Sub Center ID
x_retrReg_gID	Bad retrieve of registration using Grid ID

A.5.4 Simultaneous Retrieve of Registered Grid Models Test Case (4.5.4) Inputs

The multi-user test retrieves all of the grid fields described in A.5.1. The only difference is that the RetrReg test driver is initiated simultaneously at the HP and Windows NT machines.

A.6 Retrieve Grid Fields with the Get By ID Test

A.6.1 Retrieve a Grid Field with the Get By ID Test Case (4.6.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GET_BY_ID** directory on the target platform.

Input Filename	Description
getId_nogaps1deg	Retrieves NOGAPS 1 degree grid (2D)
getId_norapsConus_convert	Retrieves NORAPS CONUS grid (2D)
getId_norapsIndO_convert	Retrieves NORAPS Indian Ocean grid (2D)
getId_norapsNoCal_convert	Retrieves NORAPS SO CAL grid (2D)

The following is an example of the data structure required for retrieving a grid field with the Get By ID test case:

2	Record ID
g58000024507135105	Data Set Name
0	Output Format
51.0	North Latitude
5.0	South Latitude
-124.0	West Longitude
-52.0	East Longitude
100	Max X Points
50	Max Y Points
1	Scan Mode
16	Projection
390	Unit ID

A.6.2 Retrieve a Grid Field with the Get By ID Error Test Case (4.6.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GETBYID** directory on the target platform.

Input Filename	Description
X_getId_YPts	Bad Y Points
X_getId_XPts	Bad X Points
X_getId_WLon	Bad West Longitude
X_getId_UI	Bad Unit ID

Input Filename	Description
X_getId_SM	Bad Scan Mode
X_getId_SLat	Bad South Latitude
X_getId_RecID	Bad Record ID
X_getId_Proj	Bad Projection
X_getId_NLat	Bad North Latitude
X_getId_Elon	Bad East Longitude
X_getId_DSN	Bad Data Set Name
X_getId_0Pts	No X and Y Points

A.6.3 Simultaneous Retrieve of a Grid Field with the Get By ID Test Case (4.6.3) Inputs

The multi-user test retrieves all of the grid fields described in A.6.1. The only difference if that the Get By ID test driver is initiated simultaneously at the HP and Windows NT machines.

A.7 Grid Fields Get By Query Test

A.7.1 Retrieve Grid Fields with the Get By Query Test Case (4.7.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GETBYQY** directory on the target platform.

Input Filename	Description
get_gridId_ll_convertParam	Retrieves grid fields considering Grid ID, Lat/Lon, and Parameter ID (2D)
get_procId_gridId_ll_time	Retrieves grid fields considering Process ID, Grid ID, Lat/Lon and Base Time (2D)
get_procId_level_ll_convertParam	Retrieves grid fields considering Process ID, Level, and Parameter ID (2D)

The following is an example of the data structure required for retrieving a one or more 2D grid fields.

71	Generating Process ID
58	Center ID
0	Sub Center ID
245	Grid ID
11	Parameter ID
882421200	BegBaseTime (Epoc Time Format)
882421500	EndBaseTime (Epoc Time Format)
720	Beginning Tau (In minutes)
1440	Beginning Tau (In minutes)
100	Begin Level
500	End Level
100	Level Type
50.000000	North Latitude
5.000000	South Latitude
-125.000000	West Longitude
-50.000000	East Longitude
0	Output Format
45	Max X Points
75	Max Y Points
1	Scan Mode
16	Projection
390	Unit ID

A.7.2 Retrieve Grid Fields with the Get By Query Test Case, Year 2000 (Y2K) (4.7.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GETBYQY** directory on the target platform.

Input Filename	Description
get_param_lvl_ll_y2k	Retrieves grid fields considering Parameter ID, Level, and Lat/Lon with Y2K criteria (2D)
get_procId_gridId_ time_tau_ll_y2k	Retrieves grid fields considering Process ID, Grid ID, Time, Tau, Lat/Lon with Y2K considerations (2D)

A.7.3 Retrieve Grid Fields with the Get By Query Test Case, Wild Card (4.7.3) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GETBYQY** directory on the target platform. Note, all of these files were used as part of a blanket retrieve discussed in (A.7.1).

Input Filename	Description
getbq_all_wild	Retrieves grid fields with fields allowed for wild card considerations (2D)

A.7.4 Retrieve Grid Fields with the Get By Query Test Case, Erroneous Data Fields (4.7.4) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GETBYQY** directory on the target platform.

Input Filename	Description
x_gbq_uid	Bad Unit ID
x_gbq_subID	Bad Sub Center Identification
x_gbq_scan	Bad Scan Mode
x_gbq_proj	Bad Projection Identifier
x_gbq_outFmt	Bad Out Put Format
x_gbq_maxYpt	Bad Max Y Points
x_gbq_maxXpt	Bad Max X Points
x_gbq_maxPts	Bad Max Points are out of range

Input Filename	Description
x_gbq_ll	Bad Latitude and Longitude coordinates
x_gbq_ctrID	Bad Center Identification

A.7.5 Simultaneous Retrieve of Grid Fields with the Get By Query Test Case (4.7.5) Inputs

The multi-user test retrieves all of the grid fields described in A.7.1. The only difference if that the Get By Query test driver is initiated simultaneously at the HP and Windows NT machines.

A.8 2D Grid Field Catalog Listing Test

A.8.1 Retrieve 2D Grid Fields Catalog Listing with the Catalog Test Case (4.8.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/CAT_2D** directory on the target platform.

Input Filename	Description
cat_asia_tau_param	Retrieves a list of grid fields with respect to the NORAPS ASIA Model, Tau and Parameter ID (2D)
cat_eurp_tau_param	Retrieves a list of grid fields with respect to the NORAPS EUROPE Model, Tau and Parameter ID (2D)
cat_goxm_param_lv_time	Retrieves a list of grid fields with respect to the GOXM Model, Parameter ID, Level, and Time (2D)

The following is an example of the data structure required for retrieving a listing of one or more grid fields.

72	Model ID
58	Center ID
0	Sub Center ID
244	Grid ID
34	Parameter ID
882421200	BegBaseTime (Epoc Time Format)
882421500	EndBaseTime (Epoc Time Format)
720	Beginning Tau (In minutes)
1440	Beginning Tau (In minutes)
100	Begin Level
500	End Level
100	Level Type
75.000000	North Latitude
20.000000	South Latitude
-30.000000	West Longitude
45.000000	East Longitude

A.8.2 Retrieve 2D Grid Fields with the Catalog Test Case, Geographic Area Test Case (4.8.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/ TESTDATA/CAT_2D** directory on the target platform.

Input Filename	Description
cat_gsowm_world	Retrieves a list of grid fields with respect to the GSOWM Model, and the Latitude and Longitude of the entire world (2D)
cat_half-world_param_time	Retrieves a list of grid fields with respect the Latitude and Longitude of the entire world (2D)

A.8.3 Retrieve 2D Grid Fields with the Catalog Test Case, Year 2000 (Y2K) (4.8.3) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/CAT_2D** directory on the target platform. Note: All of these files were used as part of a blanket retrieve of a catalog list discussed in A.8.1 and A.8.2.

Input Filename	Description
cat_indO_tau_lvl_y2k	Retrieves a list of all grid fields considering the NORAPS Indian Ocean Model, Tau, Level, and Y2K testing (2D)

A.8.4 Retrieve 2D Grid Fields with the Catalog Test Case, Wild Card (4.8.4) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/CAT_2D** directory on the target platform. Note: All of these files were used as part of a blanket retrieve of a catalog list discussed in A.8.1 and A.8.2.

Input Filename	Description
cat_all_wild	Retrieves a list of all grid fields (2D)

A.8.5 Retrieve 2D Grid Fields with the Catalog Error Test Case (4.5.4) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/CAT_2D** directory on the target platform.

Input Filename	Description
x_cat_btime	Bad Base Time inputs
x_cat_ctrID	Bad Center ID
x_cat_gID	Bad Grid ID
x_cat_ll	Bad Latitude and Longitude
x_cat_elon	Bad East Longitude
x_cat_lvl	Bad Level Description
x_cat_lvlType	Bad Level Type
x_cat_modelID	Bad Model ID
x_cat_nlat	Bad North Latitude
x_cat_parmID	Bad Parameter ID
x_cat_slat	Bad South Latitude
x_cat_subID	Bad Sub Center ID
x_cat_tau	Bad Tau
x_cat_time	Bad Time
x_cat_wlon	Bad West Longitude

A.8.6 Simultaneous Retrieve of 2D Grid Fields with the Catalog Test Case (4.8.6) Inputs

The multi-user test retrieves all of the grid fields described in A.8.1. The only difference is that the 2D Catalog test driver is initiated simultaneously at the HP and Windows NT machines.

A.9 3D Grid Field Catalog Listing Test

A.9.1 Retrieve 3D Grid Fields Catalog Listing with the Catalog Test Case (4.9.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/CAT_3D** directory on the target platform.

Input Filename	Description
3dcat_modid_grid_sal	Retrieves a list of grid fields with respect Model ID, Grid ID, and Salinity (3D)
3dcat_modid_gridid_sv	Retrieves a list of grid fields with respect Model ID, Grid ID, and Sound Speed Profile (3D)
3dcat_modid_gridid_temp	Retrieves a list of grid fields with respect Model ID, Grid ID, and Temperature (3D)

The following is an example of the data structure required for retrieving a listing of one or more grid fields.

200	Model ID
58	Center ID
0	Sub Center ID
256	Grid ID
252	Parameter ID
882421200	BegBaseTime (Epoc Time Format)
882421500	EndBaseTime (Epoc Time Format)
0	Beginning Tau (In minutes)
7200	Beginning Tau (In minutes)
80.000000	North Latitude
-80.000000	South Latitude
-168.000000	West Longitude
160.000000	East Longitude

A.9.2 Retrieve 3D Grid Fields with the Catalog Test Case, Wild Card (4.9.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/CAT_3D** directory on the target platform. Note: All of these files were used as part of a blanket retrieve of a catalog list discussed in A.9.1.

Input Filename	Description
3dcat_all_wildcard	Retrieves a list of all grid fields (3D)

A.9.3 Retrieve 3D Grid Fields with the Catalog Error Test Case (4.9.3) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/CAT_3D** directory on the target platform.

Input Filename	Description
x_3dcat_ll	Bad Latitude and Longitude (3D)
x_3dcat_modid	Bad Model ID (3D)

A.9.4 Simultaneous Retrieve of a 3D Grid Fields with the Catalog Test Case (4.9.4) Inputs

The multi-user test retrieves all of the grid fields described in A.9.1. The only difference is that the 3D Catalog test driver is initiated simultaneously at the HP and Windows NT machines.

A.10 3D Grid Field Get Volume Test

A.10.1 Retrieve 3D Grid Fields with the Get Volume Test Case (4.10.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GET_VOLUME** directory on the target platform.

Input Filename	Description
getId_3D	Retrieves a list of grid fields with respect Model ID, Grid ID, and Salinity (3D)
getId_3D_conv	Retrieves a list of grid fields with respect Model ID, Grid ID, and Sound Speed Profile (3D)

The following is an example of the data structure required for retrieving a volume for a grid field.

1	Record ID
d58000025120010305	Data Set Name
0	Output Format
80.0	North Latitude
-80.0	South Latitude
-118.0	West Longitude
-80.0	East Longitude
50	MaxXPoints
50	MaxYPoints
1	ScanMode
16	Projection
390	Unit ID

A.10.2 Retrieve 3D Grid Fields with the Get Volume Error Test Case (4.10.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GET_VOLUME** directory on the target platform.

Input Filename	Description
X_getId_3D_DSN	Bad Data Set Name
X_getId_3D_NLat	Bad North Latitude
X_getId_3D_ RI	Bad Record ID

Input Filename	Description
X_getId_3D_Slat	Bad South Latitude
X_getId_3D_XPts	Bad X Points
X_getId_3D_WLon	Bad West Longitude
X_getId_3D_YPts	Bad Y Points
X_getId_3D_conv	Bad Unit ID conversion
X_getId_3D_u	Bad Units
X_getId_3D_proj	Bad Projection
X_getId_3D_sm	Bad Scan Mode
X_get_Id_3D_Elon	Bad East Longitude

A.10.3 Simultaneous Retrieve of 3D Grid Fields with the Get Volume Test Case (4.10.3) Inputs

The multi-user test retrieves all of the grid fields described in A.10.1. The only difference is that the Get Volume test driver is initiated simultaneously at the HP and Windows NT machines.

A.11 3D Grid Field Get Slice Test

A.11.1 Retrieve 3D Grid Fields with the Get Slice Test Case (4.11.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/SLICE** directory on the target platform.

Input Filename	Description
get_Slice	Retrieves a slice of a specific grid field (3D)

The following is an example of the data structure required for retrieving a slice of a 3D grid field.

1	Record ID
d58000025120010305	Data Set Name
0	Output Format
80.0	North Latitude
-80.0	South Latitude
-118.0	West Longitude
-80.0	East Longitude
40	MaxXPoints
40	MaxYPoints
1	ScanMode
16	Projection
390	Unit ID

A.11.2 Retrieve 3D Grid Fields with the Get Slice Error Test Case (4.11.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/SLICE** directory on the target platform.

Input Filename	Description
X_get_Slice_DSN	Bad Data Set Name
X_get_Slice_ELon	Bad East Longitude
X_get_Slice_Lvl	Bad Level
X_getId_3D_RI	Bad Record ID
X_get_Slice_NLat	Bad North Latitude
X_get_Slice_WLon	Bad West Longitude
X_get_Slice_SLat	Bad South Latitude

Input Filename	Description
X_get_Slice_X	Bad X Points
X_get_Slice_XY	Bad X and Y Points
X_get_Slice_sm	Bad Scan Mode
X_get_Slice_proj	Bad Projection
X_get_Slice_u	Bad Units
X_get_Slice_y	Bad Y Points

A.11.3 Simultaneous Retrieve of a 3D Grid Field with the Get Slice Test Case (4.11.3) Inputs

The multi-user test retrieves all of the grid fields described in A.11.1. The only difference is that the Get Slice test driver is initiated simultaneously at the HP and Windows NT machines.

A.12 3D Grid Field Profile Test

A.12.1 Retrieve 3D Grid Fields with the Profile Test Case (4.12.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/PROFILE** directory on the target platform.

Input Filename	Description
prof_id_conus	Retrieves a grid field profile considering the CONUS area
prof_id_equator	Retrieve a grid field profile considering coordinates around the equator
prof_id_Intdateline	Retrieve a grid field profile considering coordinates around the International Date Line
prof_id_pole	Retrieve a grid field profile considering coordinates around one of the poles

The following is an example of the data structure required for retrieving a profile of a 3D grid field.

d58000025120010305	Data Set Name
1	Record ID
35.0	Latitude
-90.0	Longitude

A.12.2 Retrieve 3D Grid Fields with the Profile Error Test Case (4.12.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/PROFILE** directory on the target platform.

Input Filename	Description
x_prof_ll_wild	Bad Latitude and Longitude with wild card entries
x_prof_id	Bad Record ID
x_prof_ll	Bad Latitude and Longitude

A.12.3 Simultaneous Retrieve of a 3D Grid Field with the Profile Test Case (4.12.3) Inputs

The multi-user test retrieves all of the grid fields described in A.12.1. The only difference is that the Profile test driver is initiated simultaneously at the HP and Windows NT machines.

A.13 3D Grid Field Get Track Test

A.13.1 Retrieve 3D Grid Fields with the Get Track Test Case (4.13.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GET_TRACK** directory on the target platform.

Input Filename	Description
getTrack_conus	Retrieves a grid fields associated with the desired great circle track for the CONUS area
getTrack_IO	Retrieves a grid fields associated with the desired great circle track for the Indian Ocean
getTrack_gp	Retrieves a grid fields associated with the desired great circle track for the MED area
getTrack_socal	Retrieves a grid fields associated with the desired great circle track for the SOCAL area
getTrack_wc	Retrieves a grid fields associated with the desired great circle track for the equator and prime meridian area

The following is an example of the data structure required for retrieving a track of a 3D grid field.

200	Generating Process ID
58	Center ID
0	Sub Center ID
256	Grid ID
252	Parameter ID
882421200	BegBaseTime (Epoc Time Format)
882421500	EndBaseTime (Epoc Time Format)
28.000000	North Latitude
-80.000000	South Latitude
100.000000	Range
160.0	Bearing
5	Resolution

A.13.2 Retrieve 3D Grid Fields with the Get Track Error Test Case (4.13.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/GET_TRACK** directory on the target platform.

Input Filename	Description
X_getTrack_bbt	Bad Beginning Base Time
X_getTrack_bearing	Bad Bearing
X_getTrack_range	Bad Range
X_getTrack_gi	Bad Grid ID
X_getTrack_p	Bad Parameter ID
X_getTrack_pc	Bad Process ID
X_getTrack_res	Bad Resolution

A.13.3 Simultaneous Retrieve of a 3D Grid Field with the Get Track Test Case (4.13.3) Inputs

The multi-user test retrieves all of the grid fields described in A.13.1. The only difference is that the Get Track test driver is initiated simultaneously at the HP and Windows NT machines.

A.14 Updating an Existing 2D and 3D Grid Field Test

A.14.1 Updating Existing Grid Field Test with the Update By ID Test Case (4.14.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/ TESTDATA/UPDATE** directory on the target platform. The database is then checked to verify that the grid field has been updated.

Input Filename	Description
update	Makes a new grid field and updates it with a new quality indicator showing the grid has been edited
update2	Updates an already edited grid field showing that it was edited again

A.14.2 Updating an Existing Grid Field with Erroneous Data using the Update By ID Test Case (4.14.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/ TESTDATA/UPDATE** directory on the target platform.

Input Filename	Description
X_update_ds	Bad Data Set Name
X_update_bs	Bad Relational database size (no match) also known as BLOB
X_update_ri	Bad Record ID

A.14.3 Simultaneous Updating of Existing Grid Fields with the Update By ID Test Case (4.14.3) Inputs

The multi-user test updates all of the grid fields described in A.14.1. The only difference if that the Update By ID test driver is initiated simultaneously at the HP and Windows NT machines.

A.15 Deleting an Existing 2D and 3D Grid Field Test

A.15.1 Deleting an Existing Grid Field with the Delete Test Case (4.15.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/DELETE** directory on the target platform. The database is then checked to verify that the grid field has been deleted.

Input Filename	Description
delete_modas_dataset	Deletes a modas grid field with the prescribed data set
del_id_1	Deletes a grid field with a Record ID of 1
del_norapsBosnia	Deletes a NORAPS BOSNIA grid field.

A.15.2 Deleting an Existing Grid Field with the Delete with Erroneous Data Test Case (4.15.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MAGRID/Integ/TestSuite/TESTDATA/DELETE** directory on the target platform.

Input Filename	Description
x_delete_id	Attempts to delete a grid field with an erroneous record id

A.15.3 Simultaneous Deletion of an Existing Grid Field with the Delete Test Case (4.15.3) Inputs

The multi-user test deletes all of the grid fields described in A.15.1. The only difference is that the delete test driver is initiated simultaneously at the HP and Windows NT machines. The database is then checked to verify that the grid fields have been removed.

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Appendix B - Grid Field Segment Expects and Report of Test Results

B.1 Test Results

For the MAGRID and MDGRID segments, with the exception of the installation procedures, all testing was conducted with the constructed test cases described in **Appendix A**. It should be clarified that the test cases were developed in conjunction with the test drivers to assist the developers with a variety of fairly realistic data inputs and outputs. As a result of this, the test cases described in this document were continuously updated to ensure the end results matched the expected results. In doing so the test team worked closely with the development team to verify reasons for test cases that did not match the expected results.

For this reason the expected results are identical to the planned results when running the final predelivery tests. Test drivers and test cases were verified on Configuration Managed (CM) HP-UX and Windows NT 4.0 platforms. Discrepancies were documented using a PTR database. Corrected PTRs were again tested in the CM environment to verify that problems or enhancements were properly resolved (Open and closed PTRs are listed in the Software Version Description documents for the MAGRID and MDGRID segments).

B.2 Problems Encountered

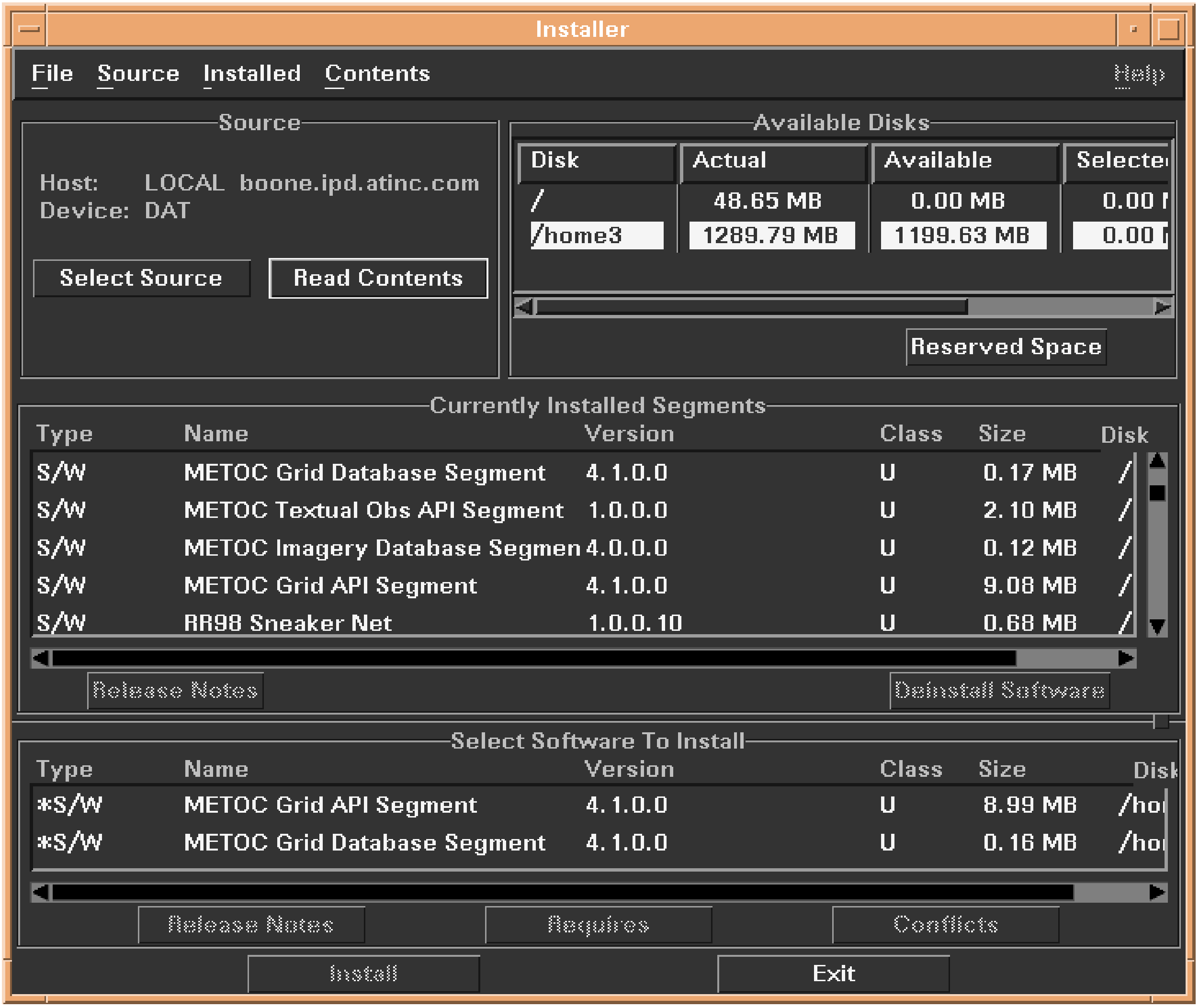
The only major problem encountered with this series of test dealt with the test results output when dealing with the NT and HP-UX platforms. When running batch processing, the NT and HP systems will execute the test case files in a different sequence. As a result, when reviewing and comparing the output data for each test, the NT system will show the same results as the HP platform but in a different order or sequence.

B.3 Test Case Results

Due to large amount of output data and results when running the provided test cases in a batch processing mode, the data is provided on a 3.5” floppy disc in a “text” format. Test cases which meet the criteria are annotated in this section.

B.3.1 MDGRID and MAGRID Segment Installation Test

Figure B-1 is a graphic example of the Segment Installer on the HP-UX system. Once the MD/MAGRID segments are properly installed the user will see the segments listed in the Currently Installed Segments portion of the Installer window. In addition, the MD/MAGRID segments will still be listed in the Select Software to Install portion of the Installer window. In this window the installed segments will have a "*" prior to each name. This denotes that the segment is successfully installed on the HP-UX platform.


Installer
File
Source
Installed
Contents
Help
Source
Select Source
Read Contents
Available Disks
Reserved Space
Currently Installed Segments
Release Notes
Deinstall Software
Select Software To Install
Release Notes
Requires
Conflicts
Install
Exit

Host: LOCAL boone.ipd.atinc.com
Device: DAT

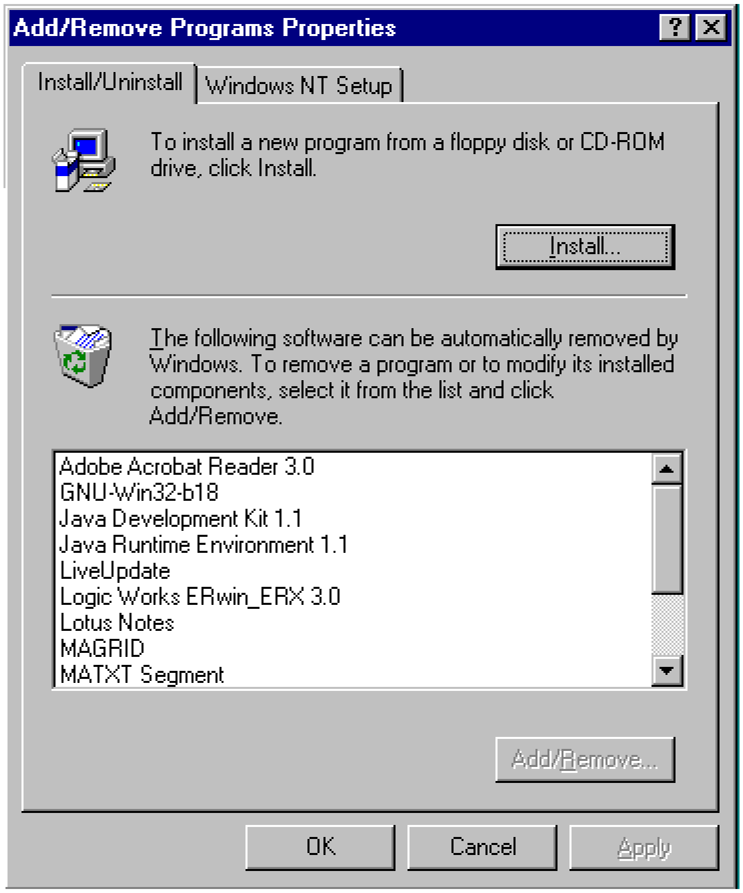
Disk	Actual	Available	Selecte
/	48.65 MB	0.00 MB	0.00
/home3	1289.79 MB	1199.63 MB	0.00

Type	Name	Version	Class	Size	Disk
S/W	METOC Grid Database Segment	4.1.0.0	U	0.17 MB	/
S/W	METOC Textual Obs API Segment	1.0.0.0	U	2.10 MB	/
S/W	METOC Imagery Database Segmen	4.0.0.0	U	0.12 MB	/
S/W	METOC Grid API Segment	4.1.0.0	U	9.08 MB	/
S/W	RR98 Sneaker Net	1.0.0.10	U	0.68 MB	/

Type	Name	Version	Class	Size	Disk
*S/W	METOC Grid API Segment	4.1.0.0	U	8.99 MB	/ho
*S/W	METOC Grid Database Segment	4.1.0.0	U	0.16 MB	/ho

Figure B-1. HP-UX Segment Installer

Figure B-2 is a graphic example of the Install Shield on the Windows 4.0 NT system. Once installed, the Add/Remove Programs Properties window will have the MAGRID segment listed in the list provided.



To install a new program from a floppy disk or CD-ROM drive, click Install.

The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.

Adobe Acrobat Reader 3.0
GNU-Win32-b18
Java Development Kit 1.1
Java Runtime Environment 1.1
LiveUpdate
Logic Works ERwin_ERX 3.0
Lotus Notes
MAGRID
MATXT Segment

Figure B-1. Add/Remove Programs Properties Window

B.3.2 2D Grid Field Data Store Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Store2D.*

B.3.3 3D Grid Field Data Store Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Store3D.*

B.3.4 Registration of Grid models in the Database Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Reg.*

B.3.5 Retrieve Registered Grid Models Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *RetrReg.*

B.3.6 Retrieve Grid Fields with the Get By ID Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *GetByID.*

B.3.7 Grid Fields Get By Query Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *GetByQuery*.

B.3.8 2D Grid Field Catalog Listing Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Cat2D.*

B.3.9 3D Grid Field Catalog Listing Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Cat3D.*

B.3.10 3D Grid Field Get Volume Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *GetVolume.*

B.3.11 3D Grid Field Get Slice Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Slice*.

B.3.12 3D Grid Field Profile Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Slice.*

B.3.13 3D Grid Field Get Track Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Get Track.*

B.3.14 Updating an Existing 2D and 3D Grid Field Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *UpdateByID.*

B.3.15 Deleting an Existing 2D and 3D Grid Field Test

The test data output and results are provided on the 3.5” floppy provided with this document. The file name is *Delete.*

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